Bumpkin Island Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

Bumpkin Island
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

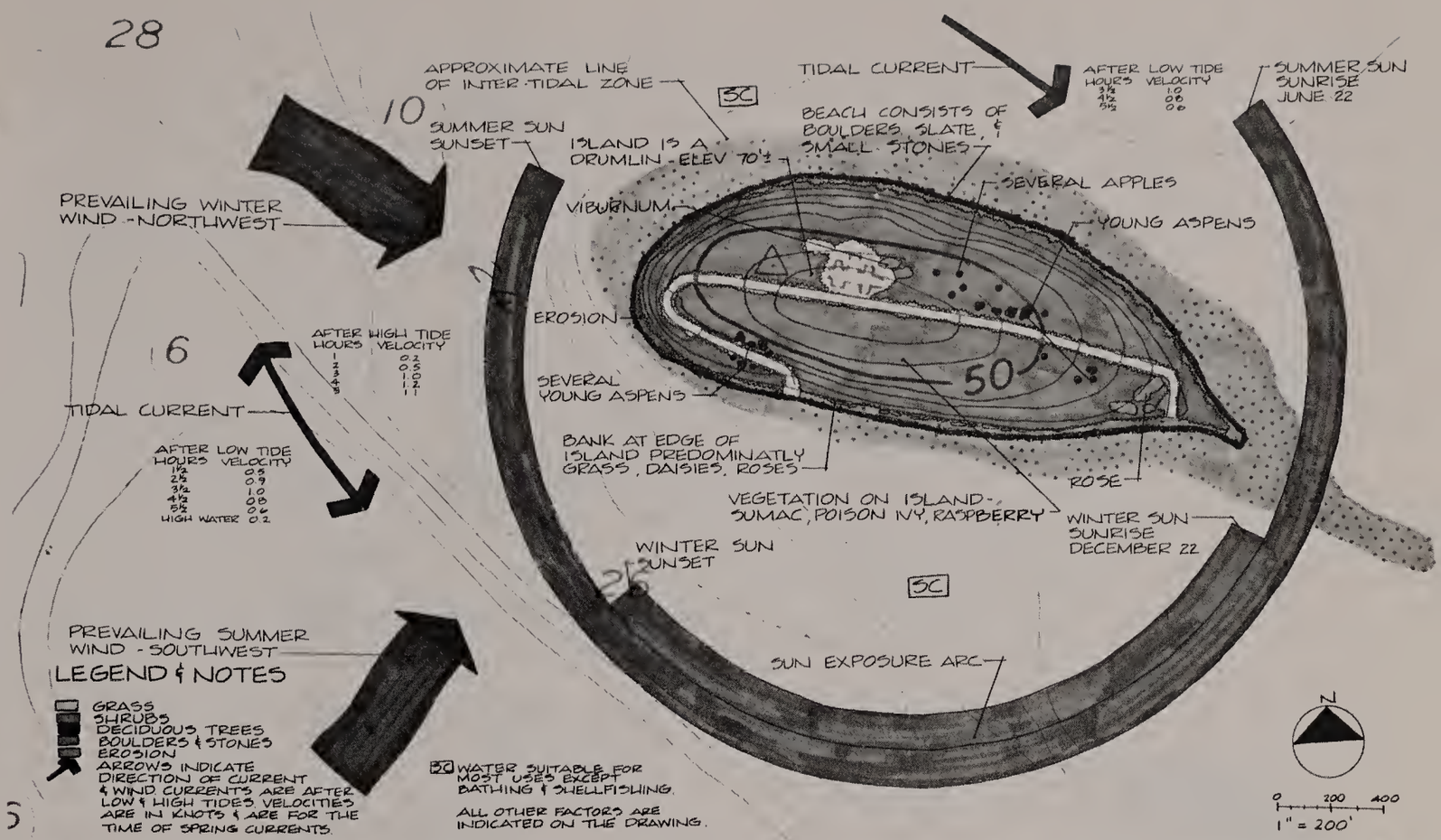
March 1973

BUMPKIN ISLAND

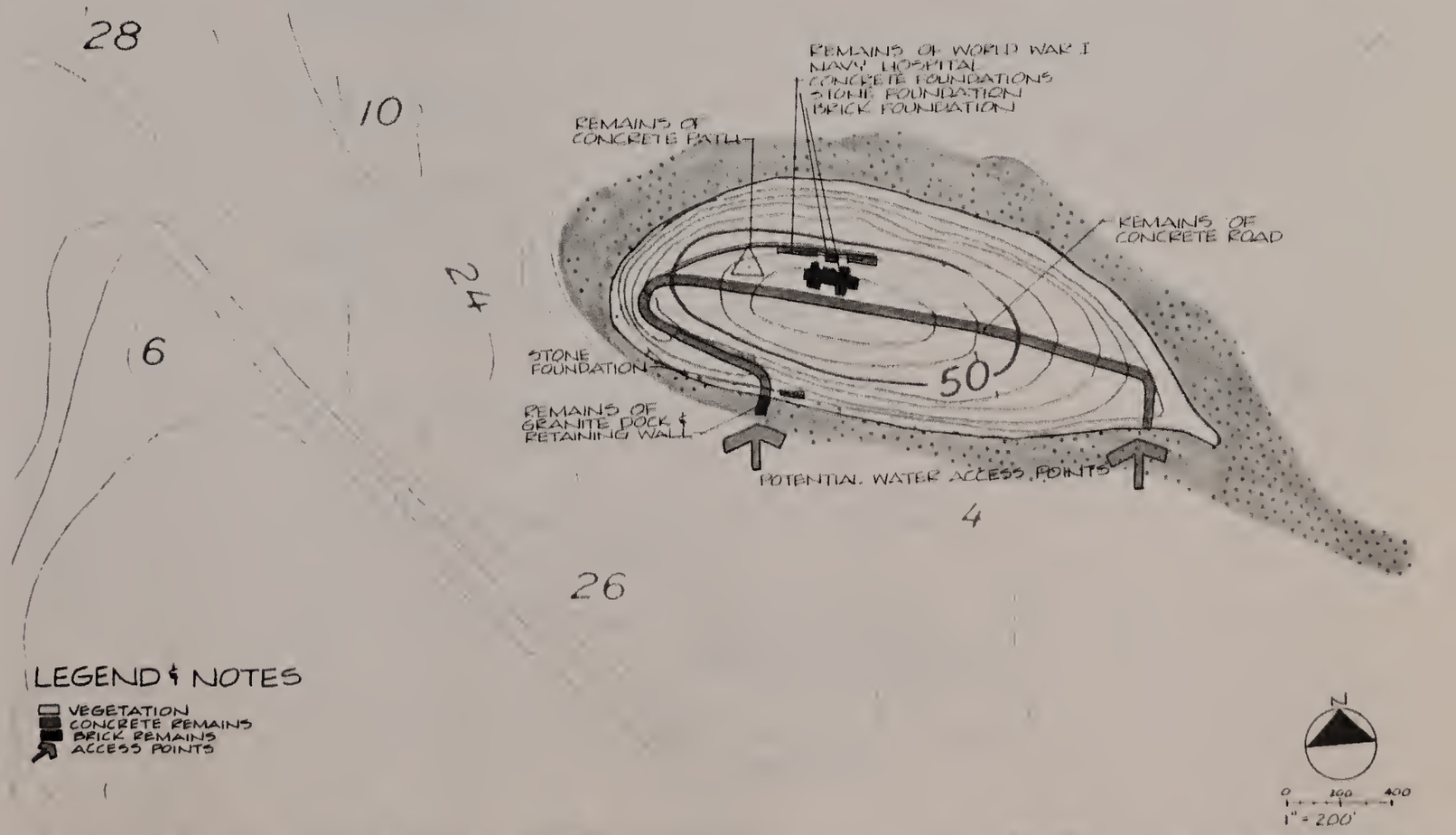
Description and History. Privately owned Bumpkin Island was the site of a productive farm in colonial times. It was bequeathed to Harvard College by Samuel Ward in 1682. Harvard rented the island farm to various families until 1900, when a wealthy philanthropist, Clarence Burrage, bought rights to the Island and built a hospital. Primarily a facility for paraplegic children, it was opened in 1902. The hospital, designed with ramps in place of stairs, cared for as many as 145 children and was operated until the outbreak of World War I. In 1917, the Navy made arrangements to use the Island and hospital for the duration of the War.

The Navy had constructed some 57 temporary structures by 1918 and about 1,300 men were stationed on the Island. The site was a training base and medical center. The Burrage Hospital building housed the Navy administration offices and sick bay. A large recreation hall and heating plant were also constructed by the Navy.

After the War, the Navy removed the temporary structures and the hospital remained. It was never reopened and was finally destroyed by fire about 1945. Today substantial remains of foundations and walls cover a portion of the Island. One interesting man-made feature is the ruins of a romantic stone building on the north side of the Island. An over grown concrete road and system of asphalt walkways lead from the eastern end of the Island to the hospital ruins.



BUMPKIN ISLAND NATURAL FACTORS



BUMPKIN ISLAND MAN-MADE FACTORS

BUMPKIN ISLAND

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

The 35 acre Island is a single drumlin, similar to the landforms of World's End. It rises gently to about 70 feet above the level of the ocean. The Island is densely overgrown with sumac, poison ivy, and several apple and young aspen trees which contribute to the Island's brilliant fall foliage. Most of the shoreline is very rocky and the northwestern end of the Island is very eroded. A long sand bar, which is exposed at low tide, extends east of the Island almost to Sunset Point in Hull. Because of its height and characteristic drumlin shape the Island offers several fine views of Hingham Bay and the surrounding communities. However, most of these potential views are blocked by the dense undergrowth.

BUMPKIN ISLAND

Plan. The plan for Bumpkin Island emphasizes its form and natural character. Important features include a small boat dock, gravel walking trails, cleared areas for picnics and small group camping sites, interpretive markers to describe the local history of the Island, a large grass playfield and a conservation and planting program to improve the Island's landscape quality.

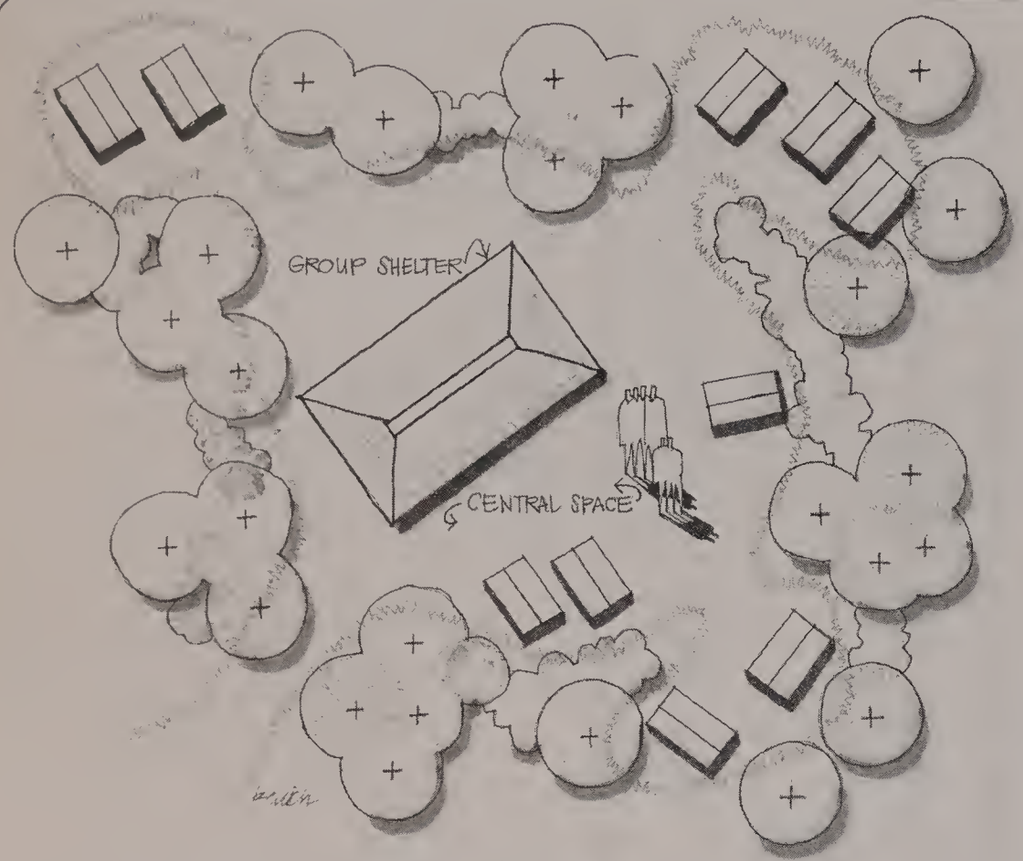
A small boat dock provides access to the Island from the 50 passenger Hingham Bay ferry loop and private boats and to facilitate Island maintenance.

A program of selective clearing and grubbing, poison ivy control and tree planting will open the Island for walking trails and views of Hingham Bay and the surrounding shore. Areas of dense brush will provide excellent bird habitat. Walking trails are provided and interpretive markers are used to describe the island wildlife and historic points of interest.

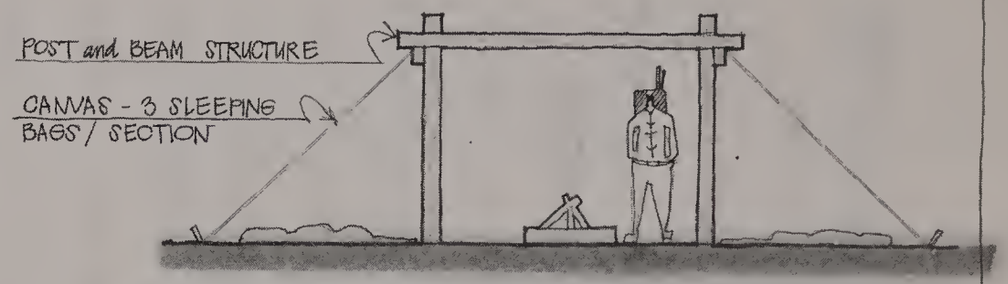
A small group camp site is located near the top of the drumlin and is designed for groups of 50-75 campers. The site has a shelter with fireplaces for day use and central cooking and dining and chemical toilets. The area is subdivided into 4 small clearings with canvas shelters and fireplaces designed for groups of 10-15 campers.

The small stone building on the north side of the Island is retained as an interesting and historic visual element. A stone rip-rap wall is proposed on the northwestern end of the Island to protect the drumlin from erosion.

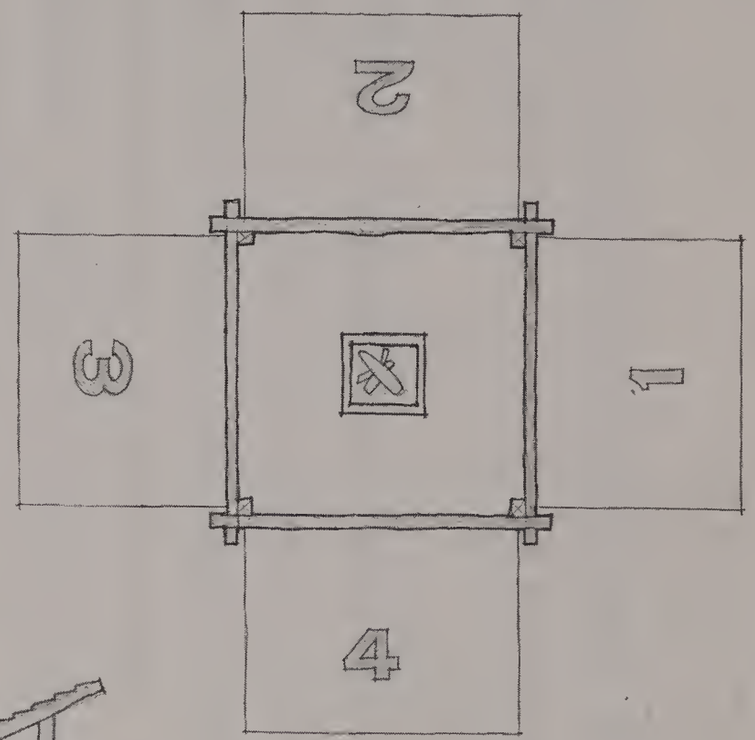
CAMPING : GROUPS



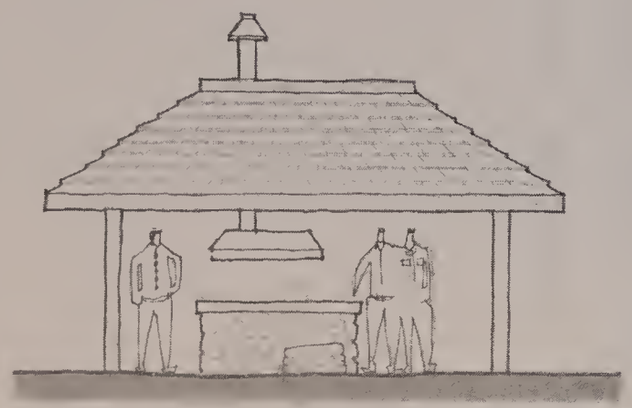
PLAN · GROUP CAMPING 1/8"=1'-0"



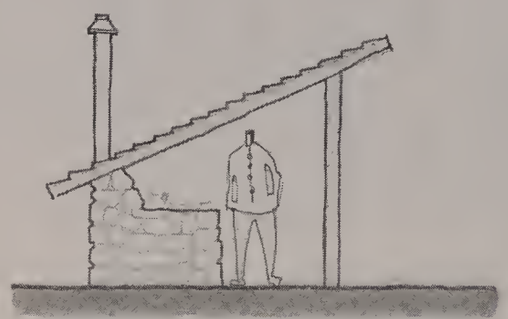
SECTION - CAMP SHELTER



PLAN - CAMP SHELTER 1/4"=1'-0"



SECTION = GROUP SHELTER 1/4"=1'-0"



SECTION = LEAN-TO 1/4"=1'-0"

PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

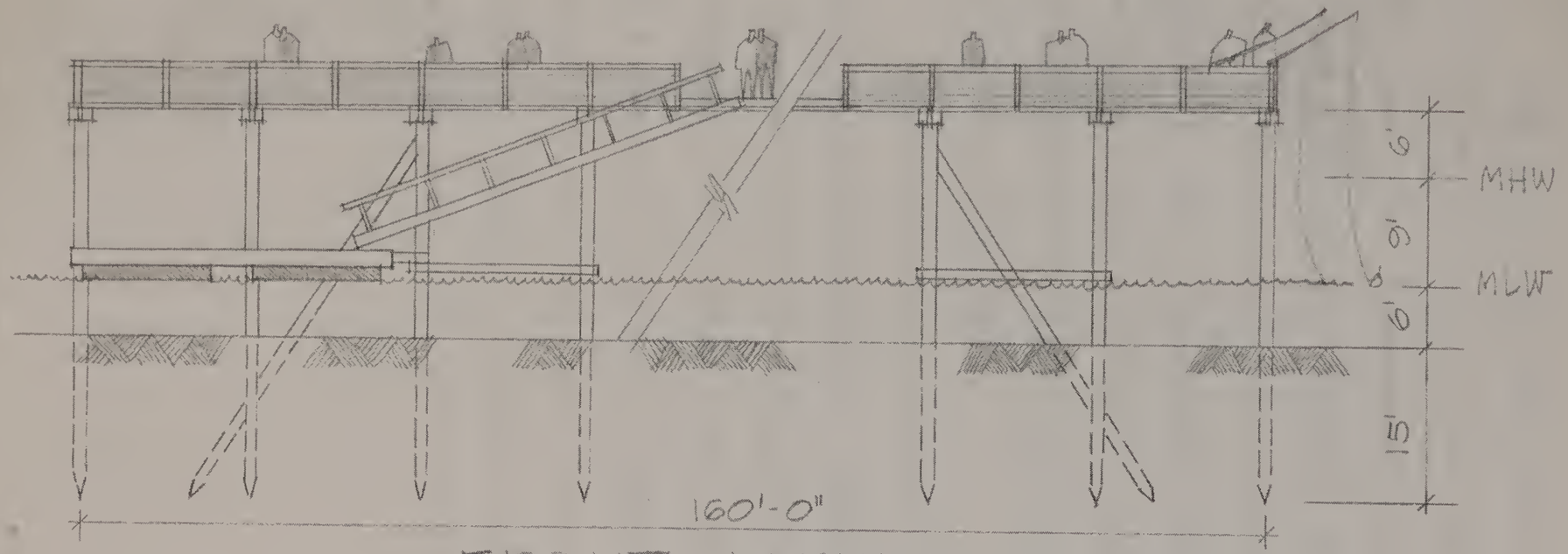
Types and Models

The general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings as small boat docks.

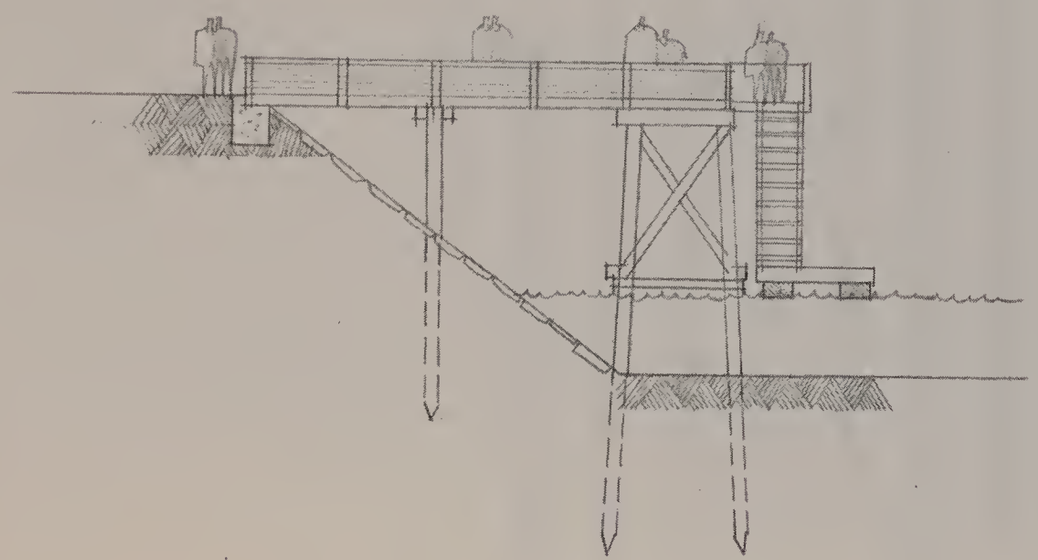
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats operating on the Chesapeake Bay ferry loop and the main line Baltimore to Annapolis ferry "spine", smaller ferry boats and private craft. With the exception of Annapolis Island all of the major proposed ferry landings are old, rehabilitated piers or otherwise used docks. Therefore island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 30 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The floated timber pier is 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

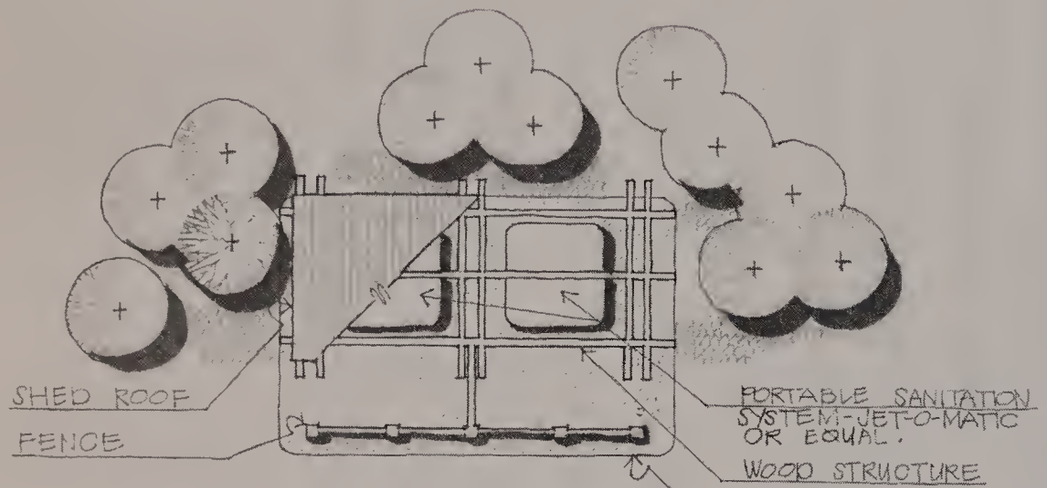
Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

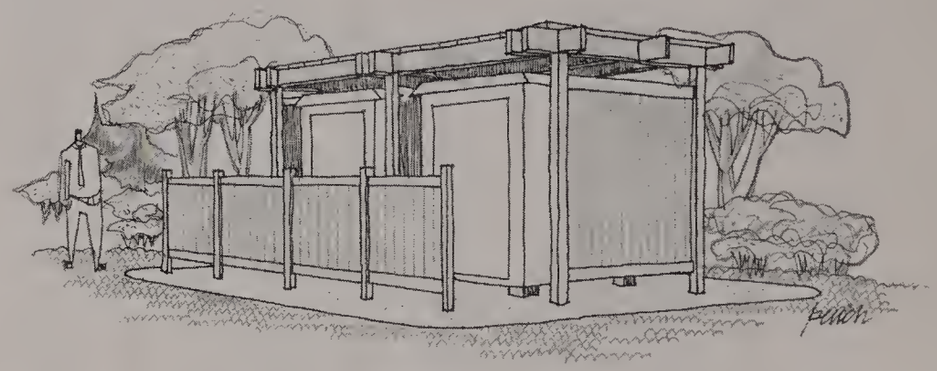
Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

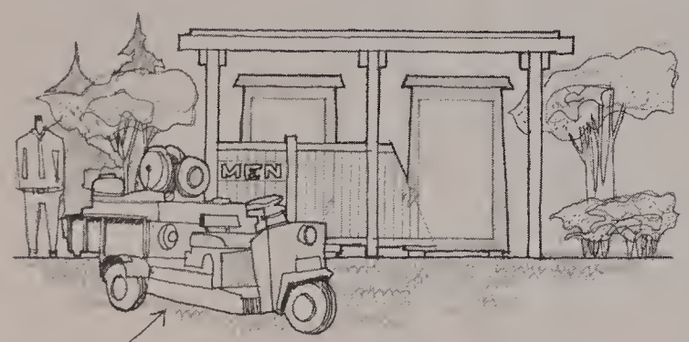
The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

COMFORT STATION



PLAN 1/4"=1'-0"





FRONT ELEVATION 1/4"=1'-0"

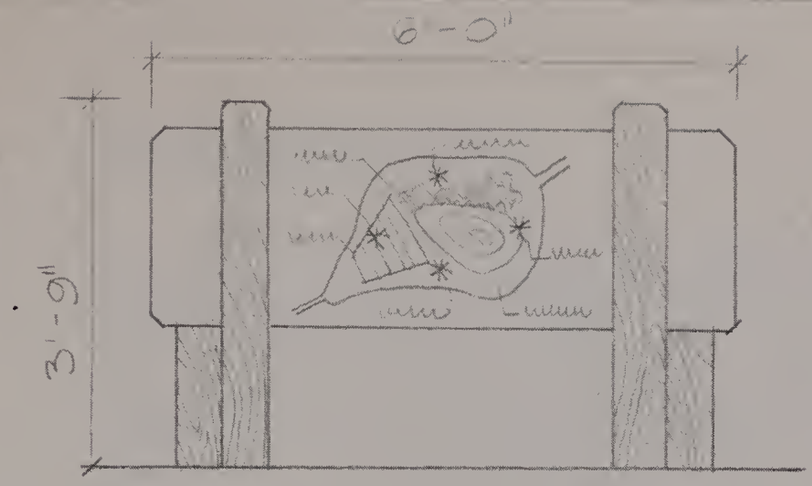
Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

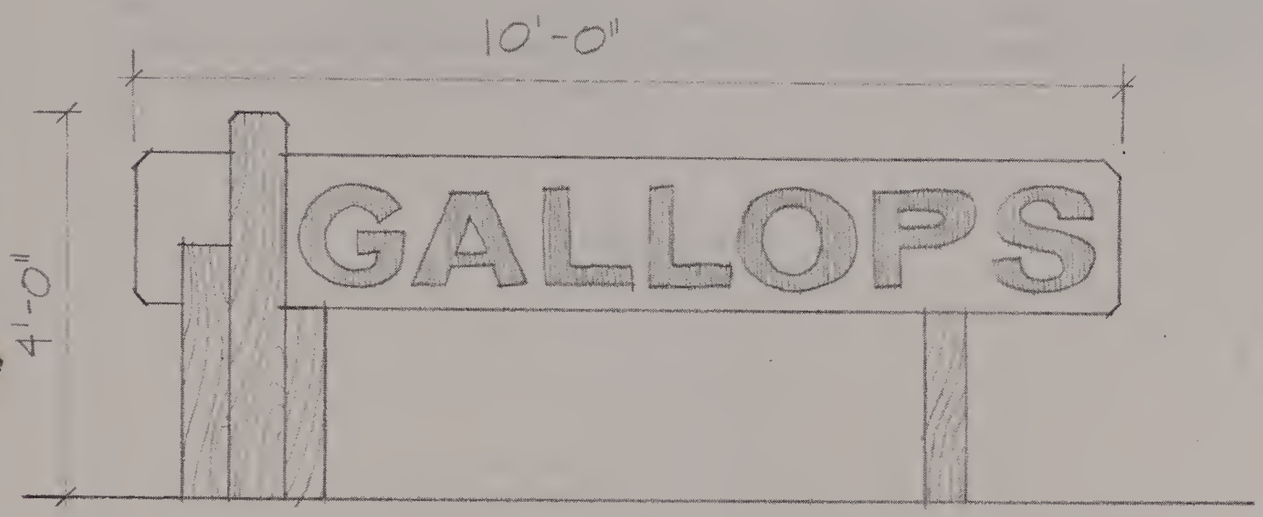
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

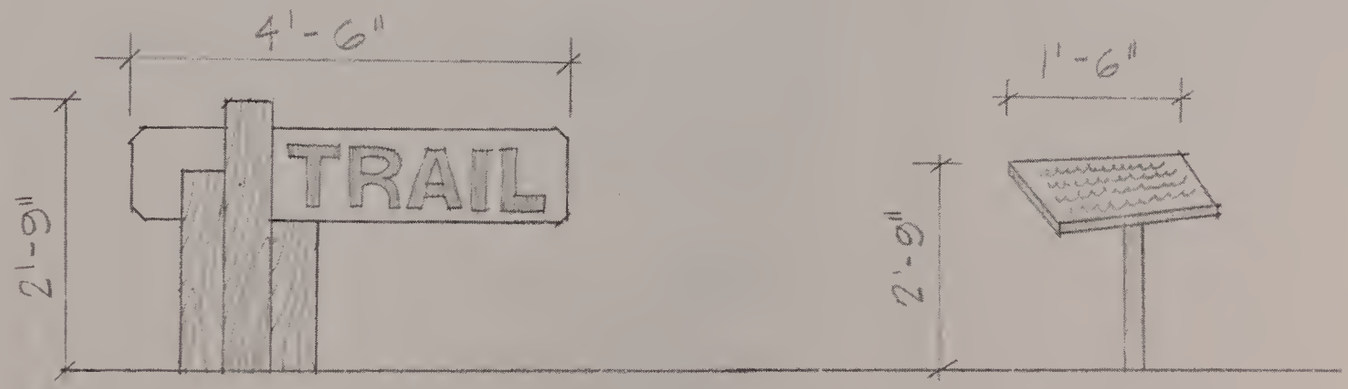
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

BUMPKIN ISLAND

The acquisition, development and administration of Bumpkin Island will be the responsibility of the Department of Natural Resources. Group campsite reservations may be managed by DNR at the ferry terminals in Boston and Nantasket. Additional administration and management of the Island may be provided by general DNR island personnel and by MDC personnel from Peddock's Island under an appropriate interagency agreement.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

BUMPKIN ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		200,000SY	.35	53	21,420	32,130	53,550	107,100
4. Seawall		950LF		15			89,240	89,240
5. Pier	1	200LF		15		34,040		34,040
Float	1		1700EA	15		1,955		1,955
Ramp	1		1300EA	15		1,495		1,495
8. Sewer Chem. Toilet	3		5500EA	53		25,245		25,245
9. Building Demol.		26,400SF		25	2,750			2,750
Const. w/Frpl.	1	1,152SF		25		16,875		16,875
Camp Str.	8		1000EA	25		10,000		10,000
10. Grading & Seeding		45,000SY	.34/SY	53	7,803	7,803	7,803	23,409
11. Trails 3'		2,000LF	33/100LF	25				
6'		3,200LF	67/100LF	25	2,800	700		3,500
12. Planting Decid.	300		40EA	53	3,672	5,508	9,180	18,360
Evergr.	200		30EA	53	1,836	2,754	4,590	9,180
Shrubs	250		10EA	53	765	1,147	1,913	3,825
14. Equipment Picnic Table	8		100EA	50	1,200			1,200
Trash Cont.	8		10EA	50	120			120

BUMPKIN ISLAND (Continued)

ITEM	NO.	UNIT	UNIT COST $		TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
15. Signs								
Large	1		3,000EA	25	3,750			3,750
Small	4		200EA	25		1,000		1,000
16. Trans. to Isl.				35	4,725	4,725	4,725	14,175
TOTAL					50,891	145,327	171,000	367,218

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Bumpkin (Maximum Daily Use - 100 Persons)			
Group Camping	2,000	$4.00	$ 8,000
Swimming	6,000	3.00	18,000
Picnicking	6,000	2.00	12,000
Hiking, Nature Walks, etc.	2,000	2.00	4,000
Boating	300	6.00	1,800
			$ 43,800

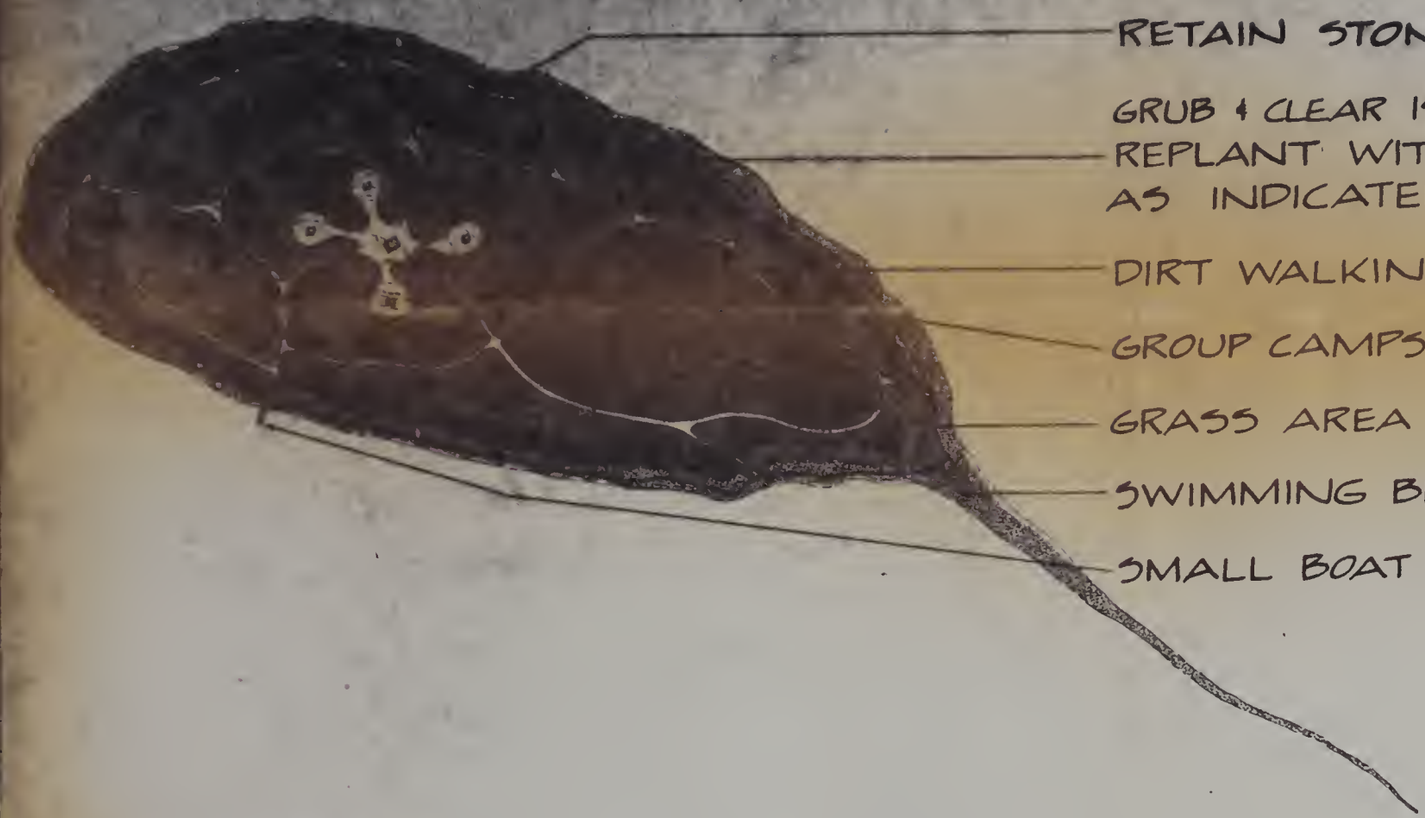
*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

HINGHAM BAY

BUMPKIN ISLAND

PLAN PROPOSAL

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN



RETAIN STONE RUINS

GRUB & CLEAR ISLAND OF POISON IVY & SUMAC

REPLANT WITH TREES, SHRUBS, & GRASS AS INDICATED

DIRT WALKING TRAILS

GROUP CAMPSITE, 50-75 PEOPLE, SHELTER & TOILET CHEMICAL

GRASS AREA FOR PLAYFIELDS, 6 ACRES

SWIMMING BEACH, 125 PEOPLE, IMPROVED

SMALL BOAT LANDING, 5 BOATS

HINGHAM BAY

WHITE HEAD FLATS

Grass/Weeds

Marsh

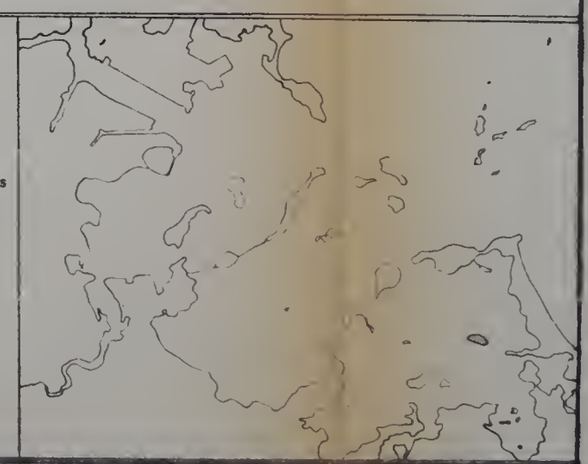
Playfields/Cultivated Fields

Swimming Beach

Stone/Shell Beach

Trees

Shrubs



BUMPKIN ISLAND
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400

scale in feet

Sample: 2.7 Acres

Date November 1971

Source U.S.G.S. 1971 & [illegible]

prepared for:

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by:

MAPC Metropolitan Area Planning Council

Bumpkin Island Support Documentation, 1973 March

Grape, Slate, and Sheep Islands Support Documentation,
1973 March

Boston Harbor Islands
Comprehensive Plan

Grape, Slate & Sheep Islands

Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

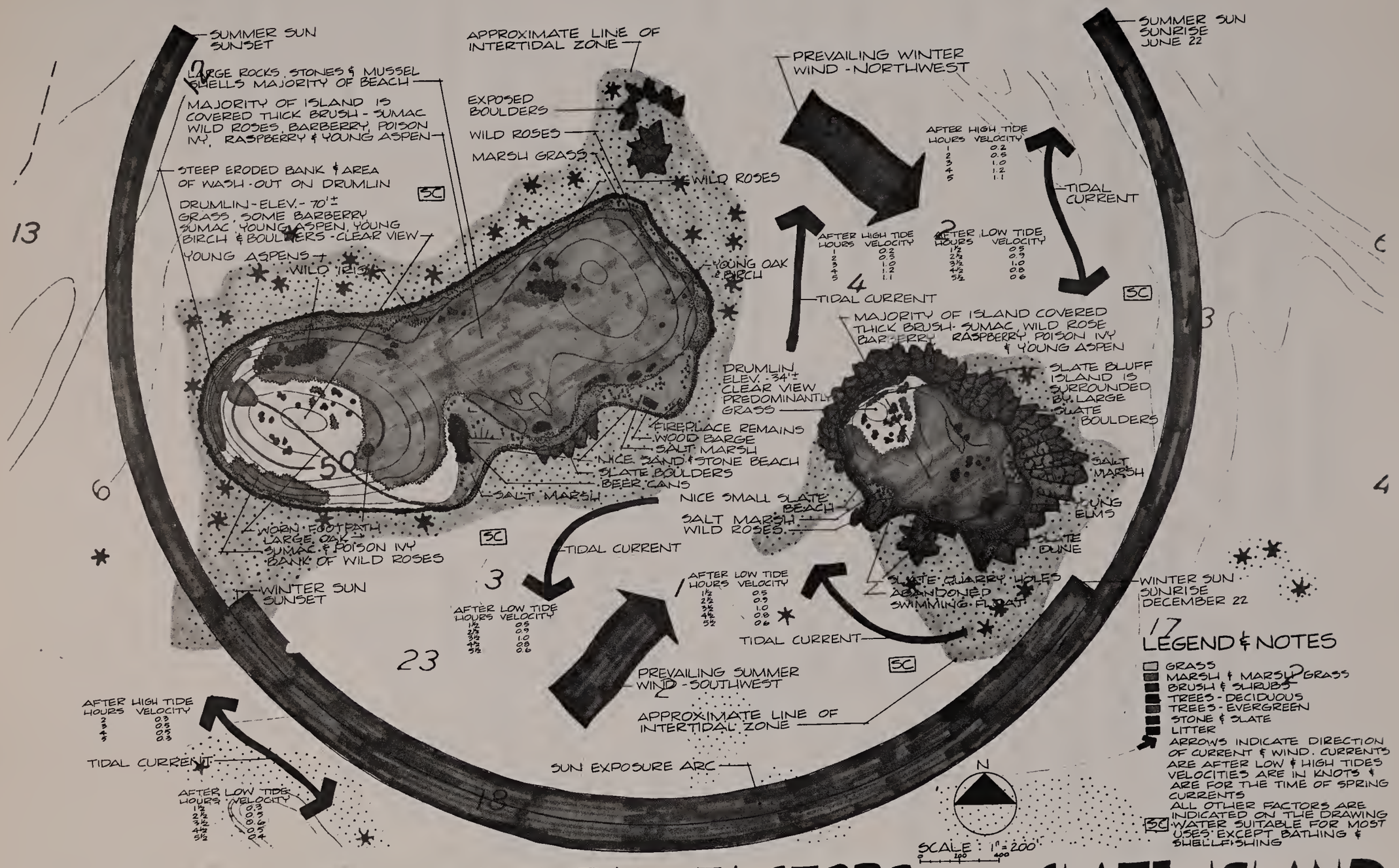
March 1973

GRAPE ISLAND

Description and History. The privately owned Grape Island was named for the abundance of grapes which grew there in colonial times. The 50 acre Island was granted to the Town of Weymouth by the General Court in 1636. It was a favorite haunt of Indians in early days due to good clamming on its western bar. The Island has yielded pieces of their stone tomahawks and evidences of these clambakes.

The Island is located near the mouth of the Weymouth Back River and consists of two drumlins, with a depression or saddle of land between them. Slate outcroppings dot the northern and southern shore. The west drumlin, the larger of the two is more than 70 feet high. Vegetation consists largely of grass covered slopes on the southwestern end of the Island, poison ivy, sumac, and a few scattered trees. Red raspberries, blackberries and wild roses add patches of food and brilliant color in the summer, and the rich supply of rose hips provide winter food for some species of birds.

The northern shore is rocky while the southern side has several areas of gravel beach and small, interesting areas of tidal salt-marsh.



GRAPE ISLAND NATURAL FACTORS SLATE ISLAND

SLATE ISLAND

Description and History. This small privately owned Island is almost wholly composed of slate ledges that run far out into the water at some points. In 1631, the General Court ordered that no slate could be taken from the Island without permission, however, a provision of the grant that gave the Island to William Torrey in 1650, allowed that any man would be free to make use of the slate.

The slate, a fine, soft, dark grey rock, probably was formed during the Carboniferous Period and was not suited for use as roofing material. However, tons of slate were quarried and used for cellar walls and underpinnings. The quarries, visible today, were located all along the northwest side of the Island where the ships anchored to load the slate. Had the slate been of a better quality, the whole Island might have been quarried.

For most of its history, the Island was apparently uninhabited and there is no mention of farming. A hermit is reported to have lived on the Island in the 1800's. In the late 1800's it was owned by Edwin Clapp of Weymouth, who deeded the Island to the Clapp Memorial Association, a charitable non-profit organization. The Clapp Association ran a summer camp for about 36 boys on Slate Island from 1937 to 1939, but the camp was discontinued due to a lack of sanitary facilities.

The 12.4 acre Island is located just east of Grape Island. Vegetation on the Island consists of a variety of wild flowers, a few trees, sumac, and an especially abundant growth of poison ivy. The shore of the Island is almost completely composed of the dark gray slate sometimes rising to steep cliffs. Tiny slate particles form a pleasant small beach on the southwest corner of the Island.

SHEEP ISLAND

Description and History. Sheep Island once covered an area of more than 25 acres, according to early records. Today the Island has eroded to less than 2 acres and is the least prominent island in Hingham Bay. It was once known as Round Island and was deeded to the Town of Weymouth by the General Court in 1636.

Colonial farmers used the Island as a sheep pasture and during the 1800's it was frequently used by camping parties. A residence and hunting lodge were built on the Island for use by hunters.

Today, the tiny Island is a long, narrow, 2 acre sliver of land only a few feet above sea level. Covered with grass and a small variety of brush, it is constantly being subjected to the forces of erosion.

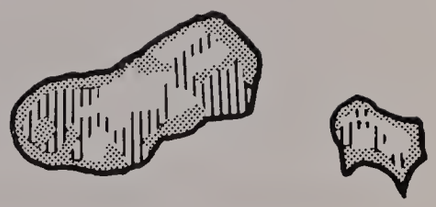
GRAPE, SLATE & SHEEP ISLANDS

SLOPE

0 - 5%

5 - 12%

12% and above



GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

GRAPE ISLAND

Plan. The plan for Grape Island emphasizes its natural character and fine gravel beaches. Important features include a small boat dock, walking trails, cleared areas for picnics and small group camping sites, interpretive markers to describe the local history of the Island, a large swimming beach and a conservation and planting program to enhance the Islands' landscape.

An excellent gravel swimming beach exists on the Island's protected southeastern side with sufficient space for more than 100 bathers. A small boat dock is located on the south shore to provide access from the Hingham Bay ferry loop and private boats, and to facilitate Island maintenance.

A small group camp site is located in the protected area between the two small drumlins and is designed for groups of from 50-75 campers. The site has a shelter with fireplaces for day use and central cooking and dining, and chemical toilets. The camp site is subdivided into 3 small clearings with 6 canvas shelters and fireplaces designed for smaller groups of 12 to 15 campers.

A program of selective clearing, poison ivy control and tree planting provides walking trails and vistas of Hingham Bay and the surrounding shore from the drumlins. Areas of dense brush provide excellent bird habitats. Interpretive markers are recommended on walking trails to describe the wildlife and the history of the Island. A stone rip-rap wall is proposed on the northwestern end of the Island to protect it from erosion.

SLATE ISLAND

Plan. The plan for Slate Island emphasizes its natural character and history. The Island's geological interest is described by small interpretive markers near the historic quarries and a conservation program will enhance its natural environment and habitat types.

This tiny Island provides a good deal of interest for the amateur naturalist and the historian. The quarries can add to the Island's general interest with descriptive markers telling of the historic mining operation and the uses of the slate.

A program of selective clearing, poison ivy control and tree planting provides walking trails and viewing areas. Areas of dense brush provide bird habitat. Additional interpretive markers are provided on walking trails to describe the Island's history and wildlife.

No dock or other means of public access is provided. Several points along the shore are suitable for beaching a small boat, but the Island's size and natural conditions indicate that use of the Island should be limited.

SHEEP ISLAND

Plan. The plan for Sheep Island makes its size the major determinant of its use. The extremely small Island is slowly being eroded and the plan provides for limited steps, including erosion control planting, to conserve the remaining portion of the Island. No other uses are indicated for the Island. It is a suitable spot for private boaters to visit during the boating season in very limited numbers. The use of the Island should be largely self-limiting as the size and lack of shade do not make the Island attractive for more than short stays by one or two small boats.

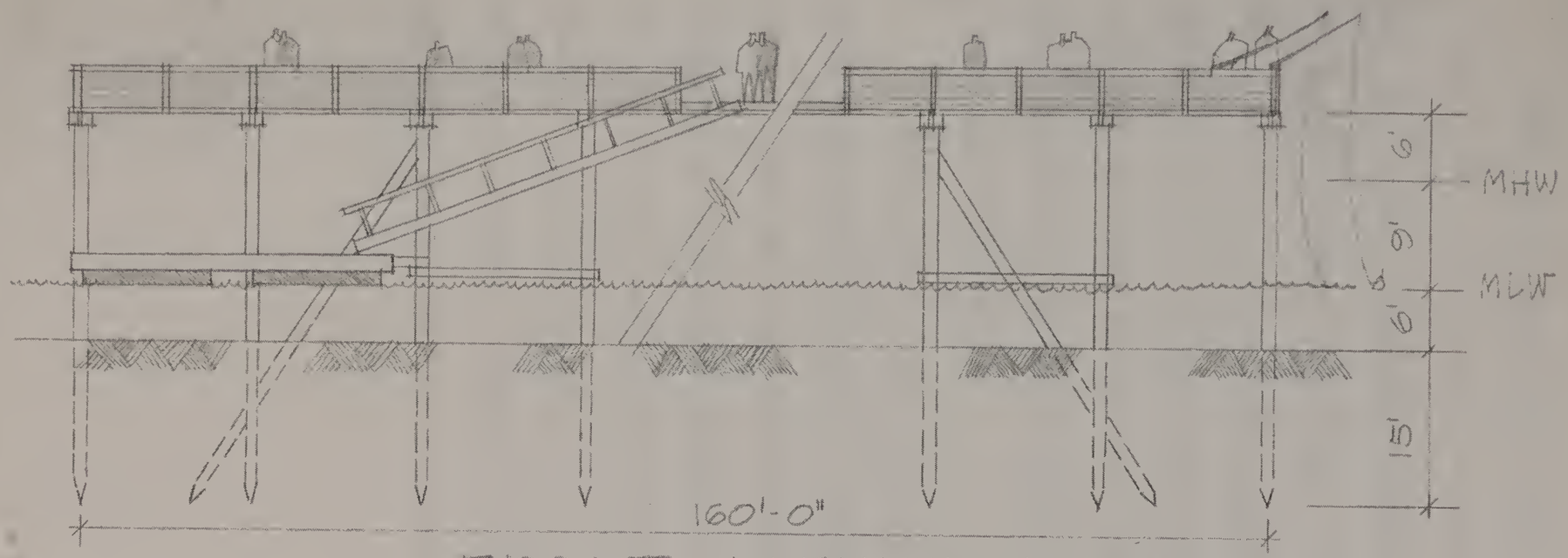
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

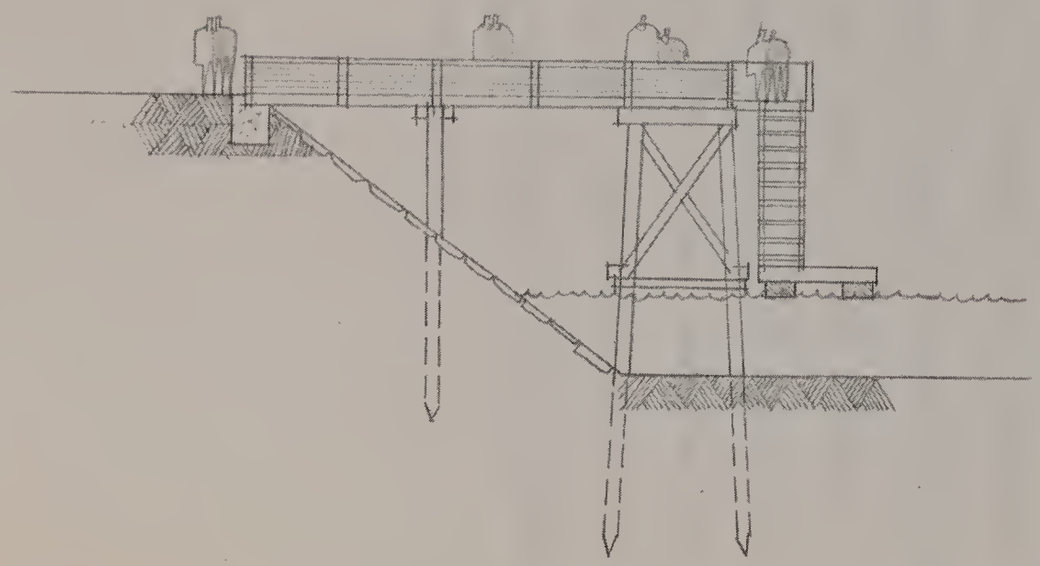
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

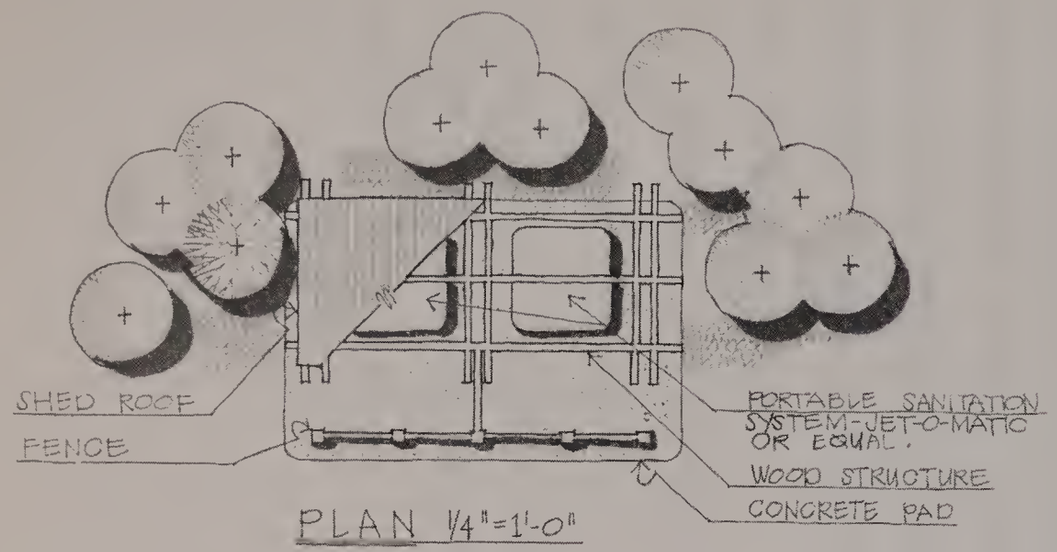
Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

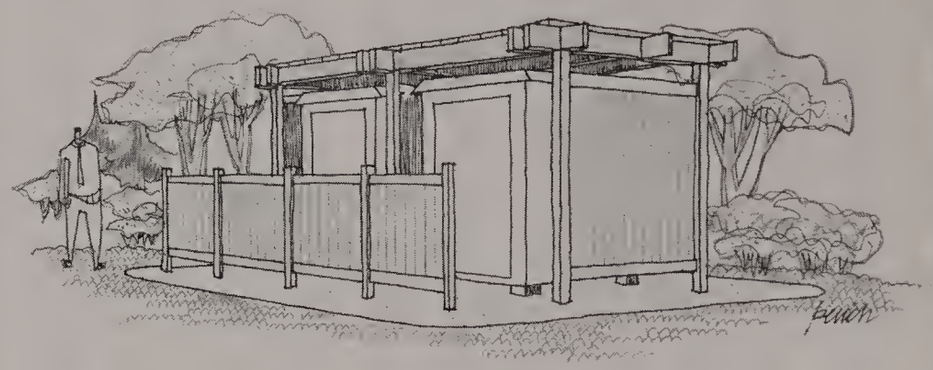
Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

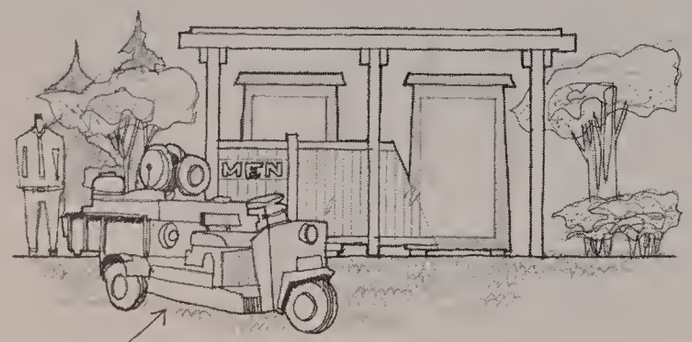
The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

COMFORT STATION



PLAN 1/4"=1'-0"





FRONT ELEVATION 1/4"=1'-0"

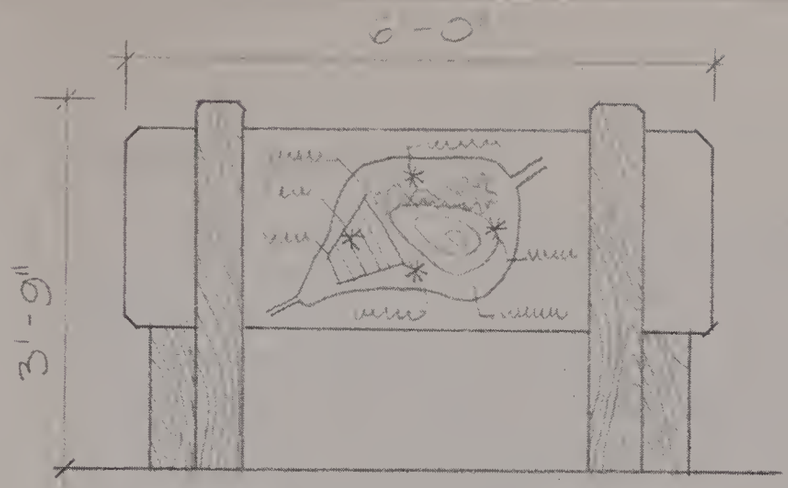
Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

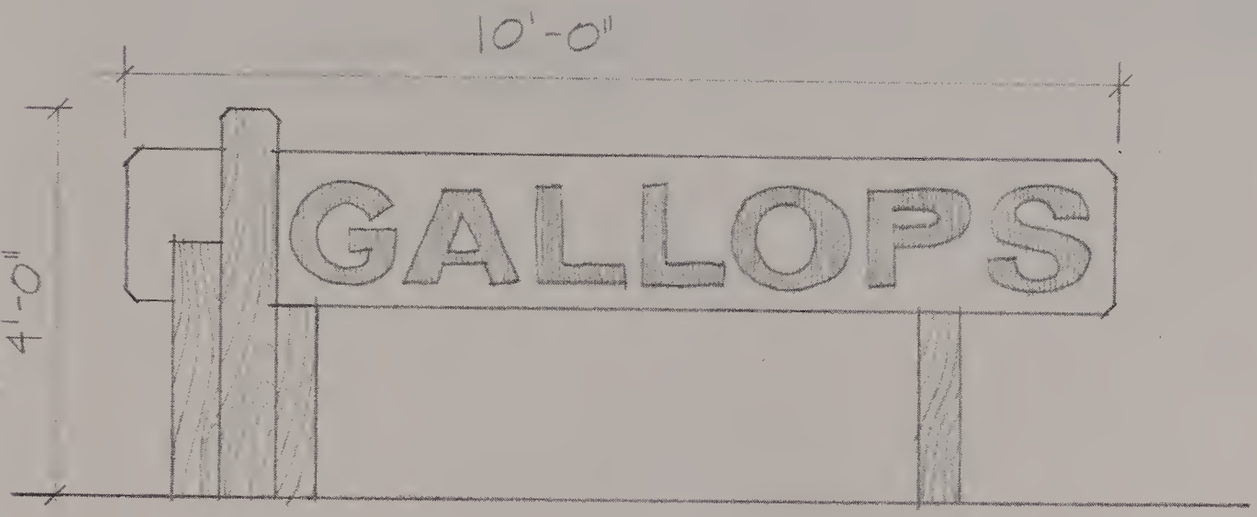
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

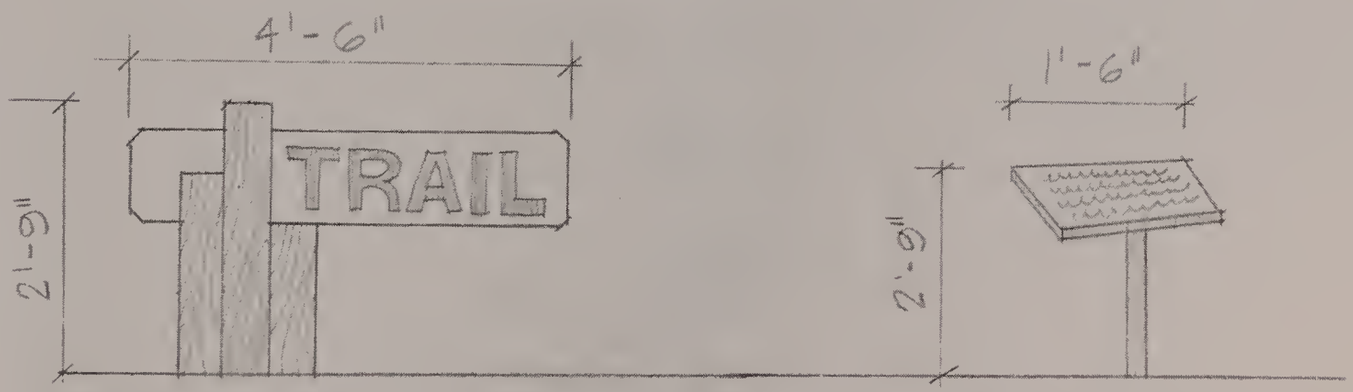
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

GRAPE, SLATE AND SHEEP ISLANDS

These three Islands will be acquired, developed and administered by the Department of Natural Resources. Group campsite reservations on Grape Island may be managed by DNR at the ferry terminals in Boston and Nantasket. Additional administration and management of the Islands may be provided by general DNR island personnel and supplemented by MDC personnel from Peddock's Island under an appropriate inter-agency agreement.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

GRAPE ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		65,000SY	.35/SY	53	6,191	10,442	17,403	34,807
3. Barge Removal	1		35,000EA	15			40,250	40,250
4. Seawall							56,120	56,120
5. Pier 10'w.	1	150LF		15		25,530		25,530
Float	1		1,700EA	15		1,955		1,955
Ramp	1		1,300EA	15		1,495		1,495
9. Bldg. Const.								
Camp Site	6		1,000EA	25		7,500		7,500
Day Use w.	1	1,150SF	10SF	25		14,375		14,375
Fire Place	1		2,000EA	25		2,500		2,500
11. Trails								
Unpav.								
3' W.		3,000LF	33/100LF	25	1,237			1,237
6' W.		3,600LF	67/100LF	25	2,175	850		3,025
12. Planting								
Decid.	300		40EA	53		6,885	11,475	18,360
Evergr.	100		30EA	53	4,590			4,590
14. Equipment								
Picnic Table	6		100EA	50	900			900
Trash Cont.	6		10EA	50	90			90
Chemical Toilet	2		5,500EA	50	16,500			16,500
15. Signs								
Large	1		3,000EA	25	3,750			3,750
Small	4		200EA	25	1,000			1,000
16. Trans. to Isl.				35	4,725	4,725	4,050	13,500
TOTAL					41,928	76,257	129,298	247,484

NOTE: Figures may not total due to rounding.

SLATE ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		20,000SY	.35/SY	53		10,710		10,710
11. Trails Unpav. 3'		2,800LF	33/100LF	25		1,156		1,156
12. Planting								
Decid.	90		40EA	53		5,500		5,500
Evergr.	30		30EA	53		1,380		1,380
14. Equipment Trash Cont.	2		10EA	50		30		30
15. Signs								
Large	1		3,000EA	25		3,750		3,750
Small	4		200EA	25		1,000		1,000
16. Trans. to Isl.						4,725		4,725
TOTAL						28,251		28,251

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

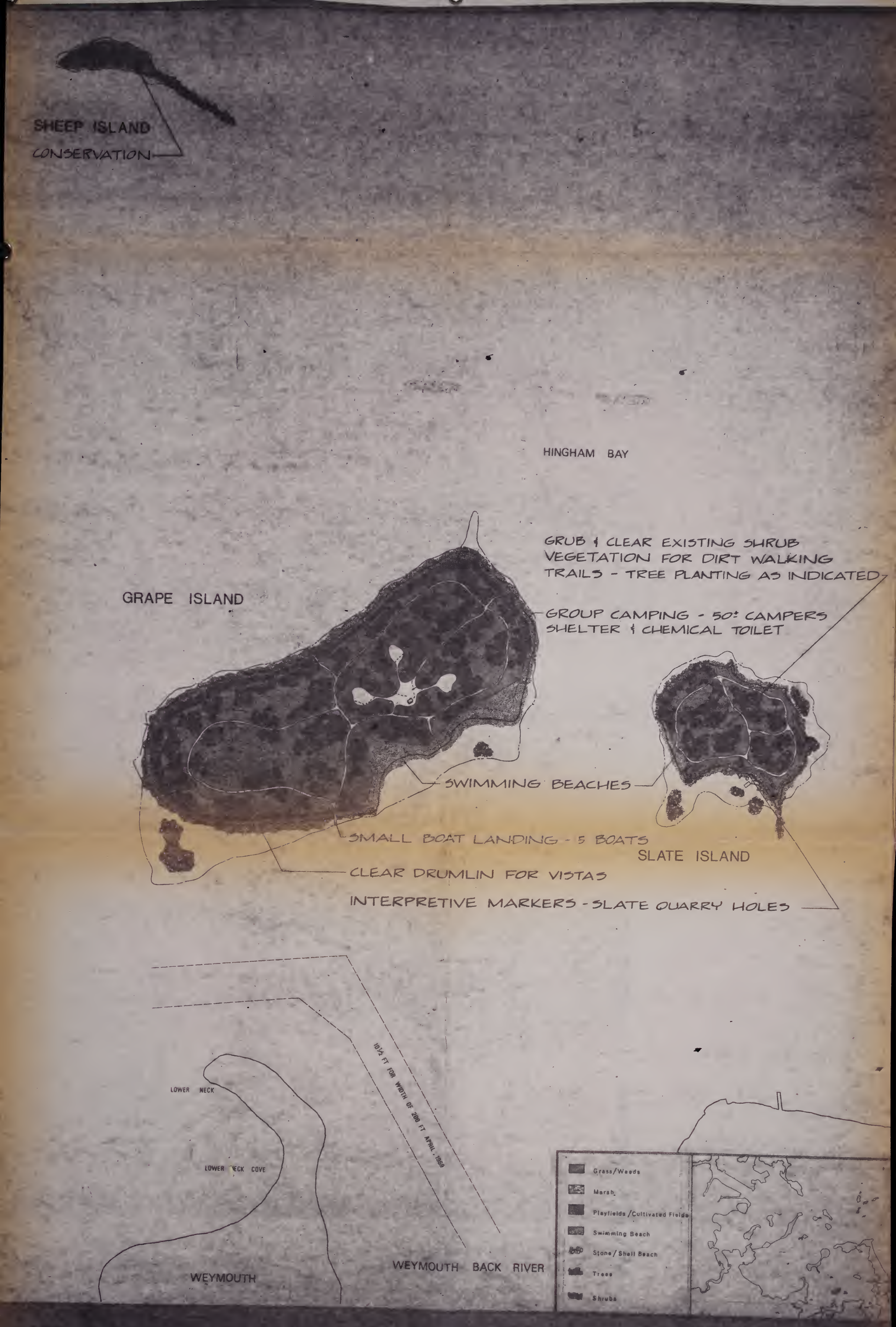
ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Grape (Maximum Daily Use - 100 Persons)			
Group Camping	2,000	$4.00	$ 8,000
Swimming	6,000	3.00	18,000
Picnicking	6,000	2.00	12,000
Boating	300	6.00	1,800
Hiking, Nature Walks	2,000	2.00	4,000
			$43,800

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Slate (Maximum Daily Use - 20 Persons)			
Picnicking	300	$2.00	$ 600
Swimming	200	3.00	600
Hiking, Nature Walks, etc.	500	2.00	1,000
			$2,200

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.


SHEEP ISLAND
CONSERVATION
HINGHAM BAY
GRUB & CLEAR EXISTING SHRUB VEGETATION FOR DIRT WALKING TRAILS - TREE PLANTING AS INDICATED
GRAPE ISLAND
GROUP CAMPING - 50± CAMPERS SHELTER & CHEMICAL TOILET
SWIMMING BEACHES
SMALL BOAT LANDING - 5 BOATS
SLATE ISLAND
CLEAR DRUMLIN FOR VISTAS
INTERPRETIVE MARKERS - SLATE QUARRY HOLES
10½ FT FOR WIDTH OF 200 FT APRIL 1969
LOWER NECK
LOWER NECK COVE
WEYMOUTH
WEYMOUTH BACK RIVER
Grass/Weeds
Marsh
Playfields /Cultivated Fields
Swimming Beach
Stone/Shell Beach
Trees
Shrubs

Grape, Slate, and Sheep Islands Support Documentation, 1973 March

Hingham Harbor Islands Support Documentation,
1973 March

Boston Harbor Islands
Comprehensive Plan

Hingham Harbor Islands
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

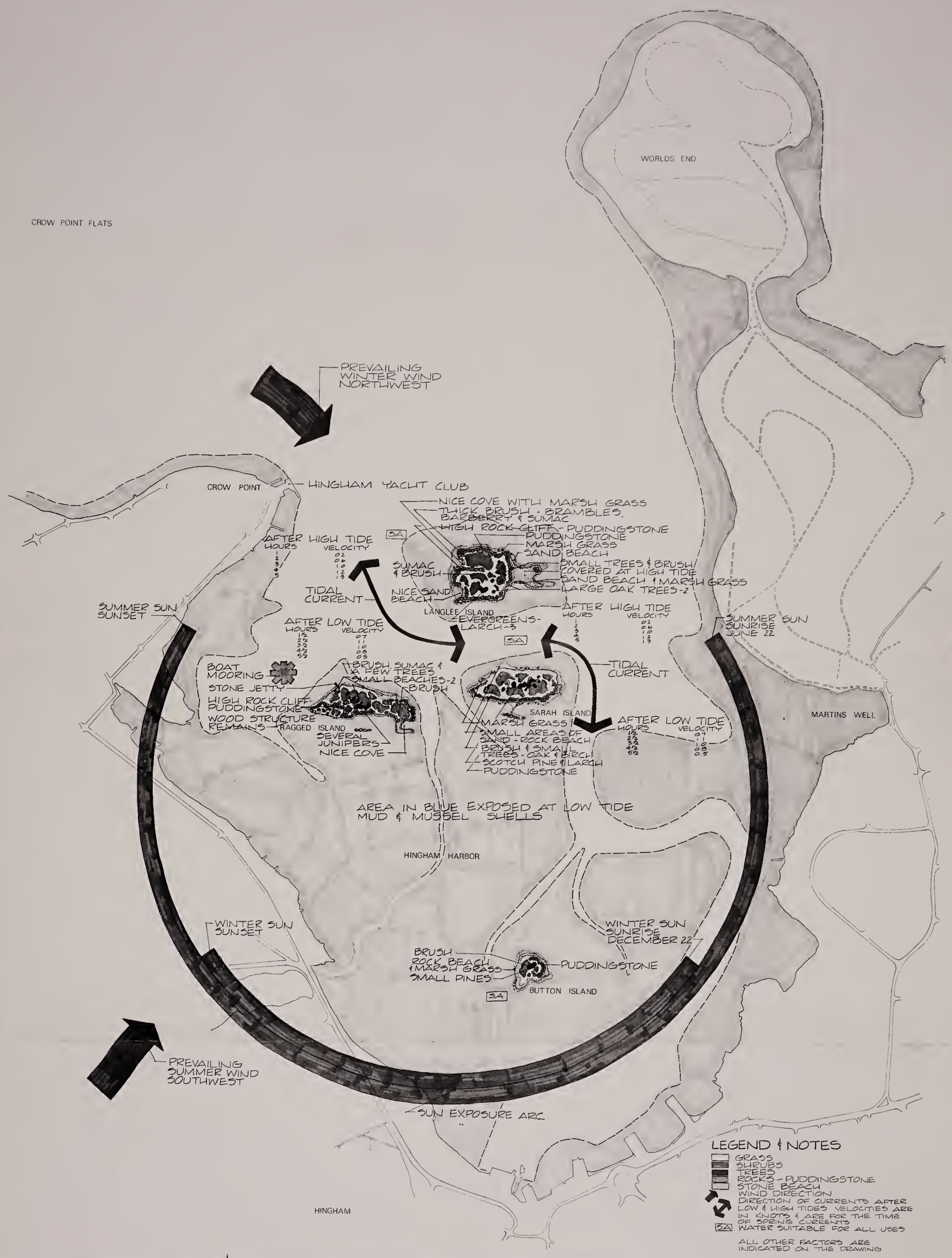
by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

HINGHAM HARBOR ISLANDS

The four small islands within Hingham Harbor: Langlee, Ragged, Sarah and Button are owned by the Town of Hingham. They are all outcroppings of bedrock covered with underbrush and several trees. Together, these islands comprise a total of only ten acres and except for a few small beaches are surrounded by rock ledge.



NATURAL & MAN MADE FACTORS

HINGHAM BAY ISLANDS

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

11/71

1971 AERIAL PHOTOS

NOTE CONTOURS FOR DESIGN PURPOSES ONLY

prepared for

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by

mapc Metropolitan Area Planning Council

RAGGED ISLAND

Description and History. Rock-bound Ragged Island, 3.9 acres in size, was the only Island in Hingham Harbor to be inhabited. John Langlee bought several of the Islands in Hingham Harbor in 1686 and lived on Ragged Island with his family. It is said that his daughter won the nick-name Ragged Sarah Langlee for her casual dress and these names were eventually transferred to the Islands. A later owner of Ragged Island built a foot bridge to the mainland near Crow Point connecting it with the lavish summer resort developed there by Samuel Downer in the late 1800's. The Island was the site of a restaurant and observation tower in about 1880. The many coves provided protected inlets for swimming. Today the Island is maintained in a natural state by several conservation groups in Hingham and is a favorite summertime picnic spot for weekend boaters.

SARAH ISLAND

Description and History. Sarah Island, is mistakenly referred to on some charts as Sailor Island, but historic records indicate its correct name. The 2 acre Island was owned by John Langlee at the time of his residence on Ragged Island. The rocky Island, difficult to approach, is covered with a few specimens of pine, larch, birch, and small maple trees. Several outcroppings of "pudding stone" add to the Island's geological interest.

LANGLEE ISLAND

Description and History. Langlee Island is approximately 4 acres in size. It was originally called Ibrook Island before it was purchased with the other islands, by John Langlee in 1686. Langlee Island has 2 small sandy beaches and a variety of trees and "pudding stone" cliffs. On a summer weekend it is a favorite picnic spot for boaters. A boat moorage for the Crow Point Yacht Club is located between Langlee and Sarah Islands.

BUTTON ISLAND

Description and History. Button Island is the smallest of the Islands in Hingham Harbor, covering less than 1 acre. It is surrounded by extensive tidal flats and difficult to reach by boat. The very rocky Island is maintained in a natural state by several Hingham conservation groups.

HINGHAM HARBOR ISLANDS

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

HINGHAM HARBOR ISLANDS

Plans. The plans for the Islands of Hingham Harbor emphasize their natural factors and limited size. The Islands are maintained as small natural preserves for the contemplation of the natural relation of island and bay.

No docks are proposed as several coves and beaches are suitable for small boat landings on the Islands. Walking trails are proposed from the landings to various points of interest. Several informal trails already exist, but more clearly defined trails will improve walking access and lessen trail blazing and the resulting damage to the natural environment. An occasional interpretive marker explains the interesting natural features, such as the "pudding stone" formations on Langlee Island.

Informal picnicking is an appropriate activity for these Islands. Although a trash barrel is recommended, people are encouraged to remove their own trash. However, formal facilities such as tables and fireplaces would detract from the natural attractiveness of the Islands.

A planting and selective clearing program enhances the natural environment. Dense brush helps to define trails and provide wildlife habitat. Trees give needed shade on Sarah Island and ground cover plants, such as the hardy legumes, protect areas subject to erosion.

NATURAL AREA

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

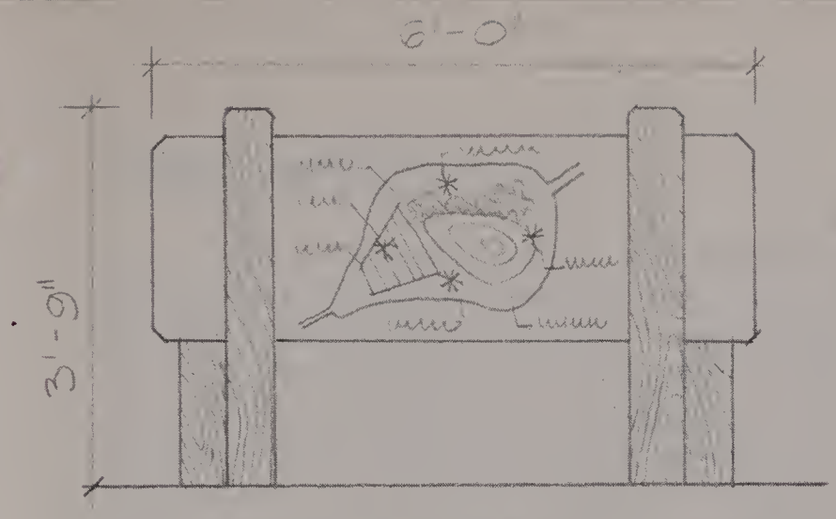
---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

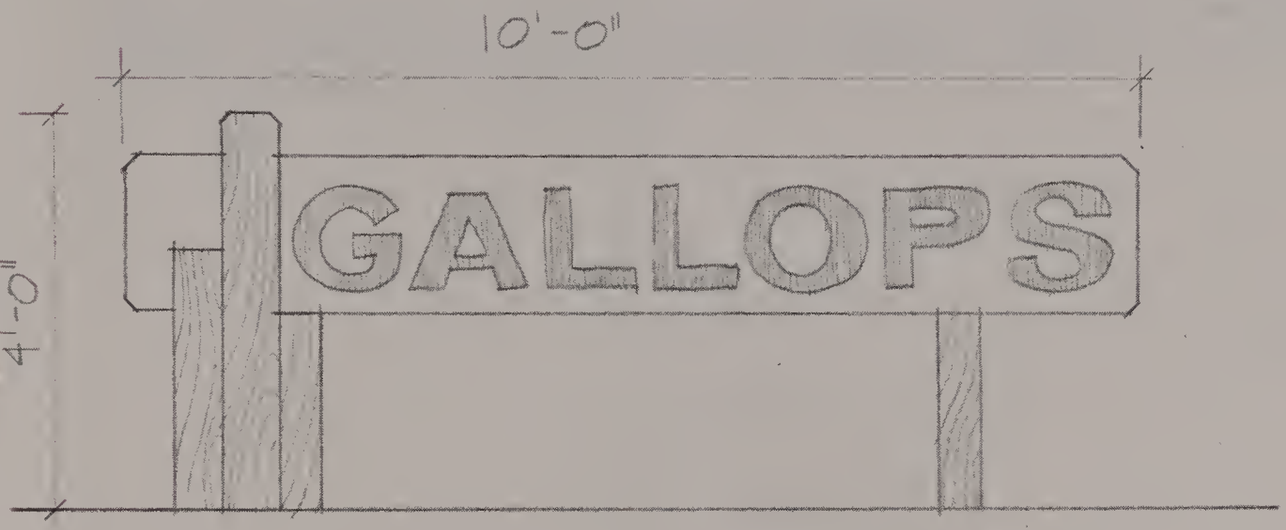
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

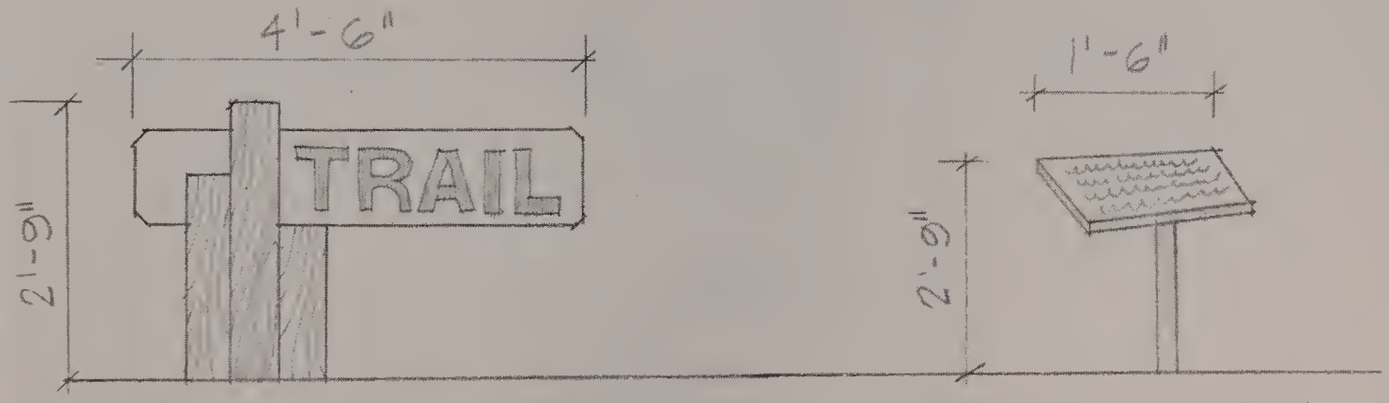
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

HINGHAM HARBOR ISLANDS

The Islands of Hingham Harbor, Ragged, Sarah, Langlee, and Button, are owned and managed by the Hingham Board of Selectmen. The Conservation Commission and various groups in the Town have demonstrated their interest in continuing to administer these Islands. Management and technical expertise may be provided the Commission by the Department of Natural Resources. Such improvements as are consistent with the provisions of the Comprehensive Plan may be financed jointly by the Town and State, with available federal participation.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

HINGHAM HARBOR ISLANDS

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		1,500SY	.35/SY	53	803			803
9. Cleanup				25	1,250			1,250
11. Trails				25				
Unpav. 3'		4,200LF	33/100LF	25	1,738			1,738
12. Planting								
Decid.	35		40EA	53	2,142			2,142
Evergr.	14		30EA	53	642			642
14. Equipment								
Trash Cont.	4		10EA	50	60			60
15. Signs								
Large	3		3,000EA	25	11,250			11,250
Small	9		200EA	25	2,250			2,250
16. Trans. to Isl.				35	4,725			4,725
TOTAL					24,860			24,860

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Ragged (Maximum Daily Use - 20 Persons)			
Swimming	500	$3.00	$1,500
Picnicking	300	2.00	600
Hiking, Nature Walks, etc.	200	2.00	400
			$2,500

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Sarah (Maximum Daily Use - 20 Persons)			
Swimming	500	$3.00	$1,500
Picnicking	300	2.00	600
Hiking, Nature Walks, etc.	200	2.00	400
			$2,500

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Langlee (Maximum Daily Use - 20 Persons)			
Swimming	500	$3.00	$1,500
Picnicking	300	2.00	600
Hiking, Nature Walks, etc.	200	2.00	400
			$2,500

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Button (Maximum Daily Use - 10 Persons)			
Swimming	100	$3.00	$300
Picnicking	100	2.00	200
Hiking, Nature Walks, etc.	100	2.00	100
			$600

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

HINGHAM HARBOR ISLANDS
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400
scale in feet

Langlee : 4 Acres
Sarah : 2 Acres
Ragged : 3.5 Acres
Button : .75 Acres

Date November 1971

Source 1971 Aerial Photograph

Note: Contours for design purposes only

prepared for:
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by:
mapc Metropolitan Area Planning Council

Hingham Harbor Islands Support Documentation,
1973 March

George's, Gallop's, and Lovell's Islands Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

George's, Gallop's & Lovell's Islands

Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

GEORGE'S, GALLOP'S, AND LOVELL'S ISLANDS

These three Islands are located near the center of Boston Harbor and are so close to one another that they are a logical grouping. Their natural and man-made factors reinforce the logic of considering the group as a single unit.

Historic Fort Warren makes George's Island one of the major attractions in the Harbor. Gallop's Island, the smallest of the group, has been extensively used by man and is covered by the remnants of its prior development. Lovell's Island has also been the site of significant Harbor fortifications but has a variety of natural features which are lacking on the other two islands.

NATURAL FACTORS

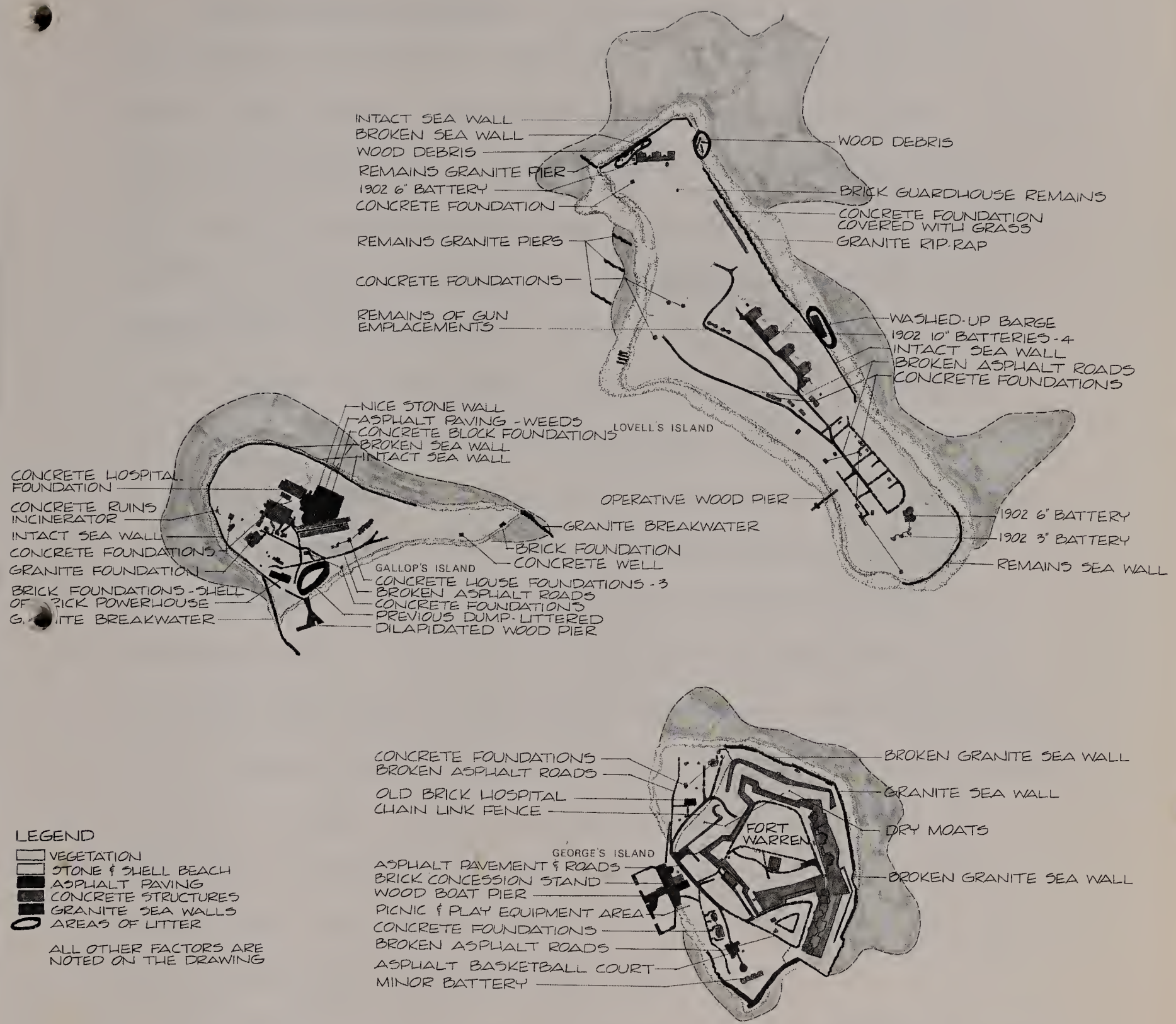
LOVELL'S GALLOP'S and GEORGE'S ISLANDS

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
mapc Metropolitan Area Planning Council



MAN-MADE FACTORS

LOVELL'S GALLOP'S and GEORGE'S ISLANDS

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
mapc Metropolitan Area Planning Council

GEORGE'S ISLAND

Description and History. George's Island, now owned by the Metropolitan District Commission, was named in honor of Captain John George, a prominent Boston merchant and town official in about 1710. During colonial times the Island was the site of a succession of farms, beginning with James Pemberton, in 1628. Thomas Crane operated a successful stock farm on the Island after the Revolution. His son, Thomas Crane, Jr., born on the Island in 1803, became a successful Quincy businessman, and established a public library in Quincy with a large donation. In 1778, the French built the first fortification of the Island, earthworks to protect their fleet in Boston Harbor. An Army Engineer group surveyed the Island as a potential fortress in the early 1820's. In 1825 the Island was purchased by the City of Boston and deeded to the Federal Government. The construction of the coursed granite seawall was begun at this time and completed in 1833. Lt. Col. Sylvanius Thayer, known as the "Father of West Point," designed and supervised the construction of Fort Warren, which was named in honor of General Joseph Warren, who fell at the battle of Bunker Hill, June 17, 1775.

The original topography of George's Island consisted of north and south drumlins. The Fort was designed to take advantage of both of these hills. The north bastions are hidden by an earth coverface and surrounded by a "dry moat". The massive size of the fortress is not evident until one enters. It is nearly a mile around the perimeter formed by the Fort's walls. Inside the walls, a large parade field is edged with maple trees.

The seawall and Fort were built entirely of Quincy granite and are generally in excellent condition today. Each block of granite was cut and faced by hand to fit its location - a process which took one laborer from one to two days. The Fort was completed in 1850 and is an outstanding example of mid-nineteenth century fortification. At the outbreak of the Civil War the fortress was without guns. The Massachusetts State Legislature appropriated 1.5 million dollars to fortify the coast and many heavy Blakely guns were purchased from England for Fort Warren. Its full strength was 300 guns and 1500 men. By 1861 the Fort was garrisoned and being used as a prison for Southern prisoners of war. This period of the Island's history is the most interesting. The Confederate prisoners included many prominent southerners, including James Murray Mason and John Slidell, the Confederate Commissioners to England and France, who were captured aboard the British mail steamer Trent as it sailed for England. The Trent Affair was a serious incident that threatened to bring England into the War on the side of the South. Mason and Slidell were released under special orders from President Abraham Lincoln. Alexander Hamilton Stephens, Vice President of the Confederacy, was also imprisoned at Fort Warren after his capture in Georgia, early in 1865. There are numerous descriptions of exciting but mostly unsuccessful, attempts to escape from Fort Warren, The famous Yankee song "John Brown's Body," was composed by members of the 2nd Infantry who were quartered at Fort Warren during the first year of the Civil War.

GEORGE'S ISLAND

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

At the beginning of the war with Spain in 1898 Fort Warren again assumed an important role. It was the first line of defense for Boston Harbor and several new 10 and 12 inch disappearing guns were installed by 1902. In addition, 3 and 4 inch guns were installed as protection against small torpedo craft. During World War I the old quarters were again crowded with 1600 men, many of them in tents scattered over the Island. The Fort was the headquarters for the Boston Harbor Defense Command until 1922, when the headquarters were transferred to Fort Banks in Winthrop. During World War II the Fort was reactivated and used as a base for Harbor mining operations and as an observation post. Fort Warren was decommissioned in 1946 and acquired by the MDC in 1951. The Fort has been designated a National Historic Site by the U.S. Department of Interior.

Most of the 28 acre Island is occupied by the five-bastioned granite Fort. It is presently the major attraction in Boston Harbor and is visited by an estimated 70,000 persons annually. The area outside the Fort walls is scattered with picnic tables, fireplaces and litter barrels.

The Fort has been neglected for years and very little of it is open to the public. Many of the historic and decorative fixtures have been stolen or vandalized. Currently, the MDC has an employee living full-time on the Island, who is engaged in researching its history and restoring some of the historic rooms. Included in this restoration are murals depicting Civil War activities on the Island in the John Brown Chapel, and an interesting mine plotting room.

A large pier on the west side of the Island serves commercial passenger boats and about 30 private boats may dock at floats. A small beach is located north of the dock. The rest of the shore is very rocky or rip-rap and granite seawall. A large breach has occurred in the seawall on the eastern side of the Island and several of the smaller historic gun emplacements have been destroyed. An engineering study, currently in progress, will determine the necessary repairs for the seawall.

GALLOP'S ISLAND

Description and History. Privately owned Gallop's Island was named for its first recorded owner, Captain John Gallop, a Harbor Pilot. Successive owners were farmers who produced vegetables and milk for ships at anchor in the Harbor. Sand and gravel were removed from the Island at various times. In 1827, a substantial part of a gravel cliff was dug away to provide an open view of the sea for the proposed Fort Warren on George's Island.

In 1819, the Island was purchased by Peter Newcomb, who operated a successful farm. After his death in 1833, his widow opened a restaurant and inn and the Island was known as Newcomb's Island. In 1855, the inn was sold to Joseph Snow, who continued to operate a successful and popular establishment.

In 1860 the City of Boston purchased the Island and deeded it to the Federal Government. During the Civil War long lines of wooden barracks were built for the nearly 3,000 recruits stationed on the Island. After the War, Gallop's Island was returned to the City and in 1866 the quarantine station for Boston Harbor was moved to the Island from Deer Island. For several years the hospital took in about 50 patients a year. Those who died were buried in unmarked graves on the Island. Several buildings were constructed for the hospital and in 1870 a cut granite seawall was built to arrest erosion on the northern and western sides of the Island.

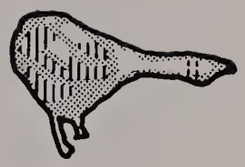
GALLOP'S ISLAND

SLOPE

0 - 5%

5 - 12%

12% and above



GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

The U.S. Public Health Service assumed control of the Island in 1916 and established the Immigration Station which was to process thousands of immigrants. Facilities consisted of an administration building, several dormitories, nurses quarters, doctor's residences, and the hospital. One of the few brick buildings was the powerhouse, part of the Immigration Station was moved in the 1920's but the quarantine hospital remained until 1937 when it was moved to the mainland.

The United State's Maritime Service established a radio school on the Island around 1940. Several new buildings were constructed, including a large recreation hall, the foundation of which is still visible next to a paved outdoor athletic court. The school was closed after the war and several of the buildings were sold. The large recreation hall was dismantled along with at least three other buildings, and moved to Boston University. The Island, sold at public auction in 1947, has since been used briefly as a dump as is evidenced by a pile of burned debris near the dock.

The 16 acre Island consists of one large drumlin that ends in a long, low sandbar at the eastern end. A major boat channel passes between Gallop's and Lovell's Island. The old dilapidated Army dock on the south side is protected by a jetty extending into the water and forming a protected landing area that is partially blocked by a sunken metal barge. The shore to the east of the dock is a very good sand beach, while most of the remainder of the Island's perimeter is bounded by seawall. There is a great deal of sumac and wild roses as well as some grassy open areas and brush. A few trees, including maples, pine, aspen, and apple, are located on the south side of the Island. There are excellent views of the entire Harbor from the top of the drumlin.

LOVELL'S ISLAND

Description and History. Lovell's Island, owned by the Metropolitan District Commission, is believed to have been named after Captain William Lovell of Dorchester. It is located near the junction of the two main channel entrances to Dorchester Bay. In colonial times the Island was covered with mature trees, cut for firewood over the years. A succession of farms were established on the Island was acquired by the City of Boston and later given to the Federal Government. Congress appropriated money and a protective, cut granite seawall was constructed on the northwest side of the Island in 1844. A lighthouse buoy station was established in 1874. The Island was the training station for Company K of the 18th New Hampshire Volunteer Infantry during the Civil War. Sometime after the Civil War, an unusual submarine casemate was constructed with its entrance from the southwestern side of Lovell's Island. A tunnel was constructed under the channel between Lovell's and Gallop's Islands. Explosives could be set to go off at the same time a ship passed through the channel above the tunnel.

Fort Standish was established in 1900 and was named for Myles Standish, who arrived on the "Mayflower" and gained military distinction while a member of Plymouth Colony from 1620 to 1656. The Fort consisted of several batteries of 10, 6 and 3 inch rifles and several temporary barracks. During the Second World War, search light and modern observation stations were built. The Fort was

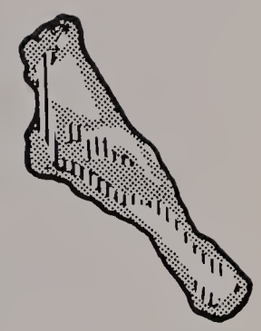
LOVELL'S ISLAND

SLOPE

0 - 5%

5 - 12%

12% and above



GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

declared surplus shortly after 1946 and the Island was acquired by the MDC in 1951.

The 62 acre Island is about 3/4 mile long and 1/4 mile wide. It has a drumlin in the center and is very low at both ends. The topography has been greatly modified for Fort Standish. A few pine trees are clustered near the center of the Island, but the majority of ground cover consists of sumac and dense brush. The Island is used as a loafing and feeding area by several varieties of shorebirds and is used for nesting by gulls. Meadow mice were found in some of the grassy areas. The north and northeast shores are protected by cut granite seawalls. The south side of the Island has an excellent sandy beach, which is presently used for bathing and picnicking.

The massive concrete gun batteries of Fort Standish are the outstanding man-made features on the Island. A new pier, constructed by the MDC in 1970, provides access to the Island. New floats and ramps have been added for the summer of 1972.

GEORGE'S, GALLOP'S, AND LOVELL'S ISLANDS

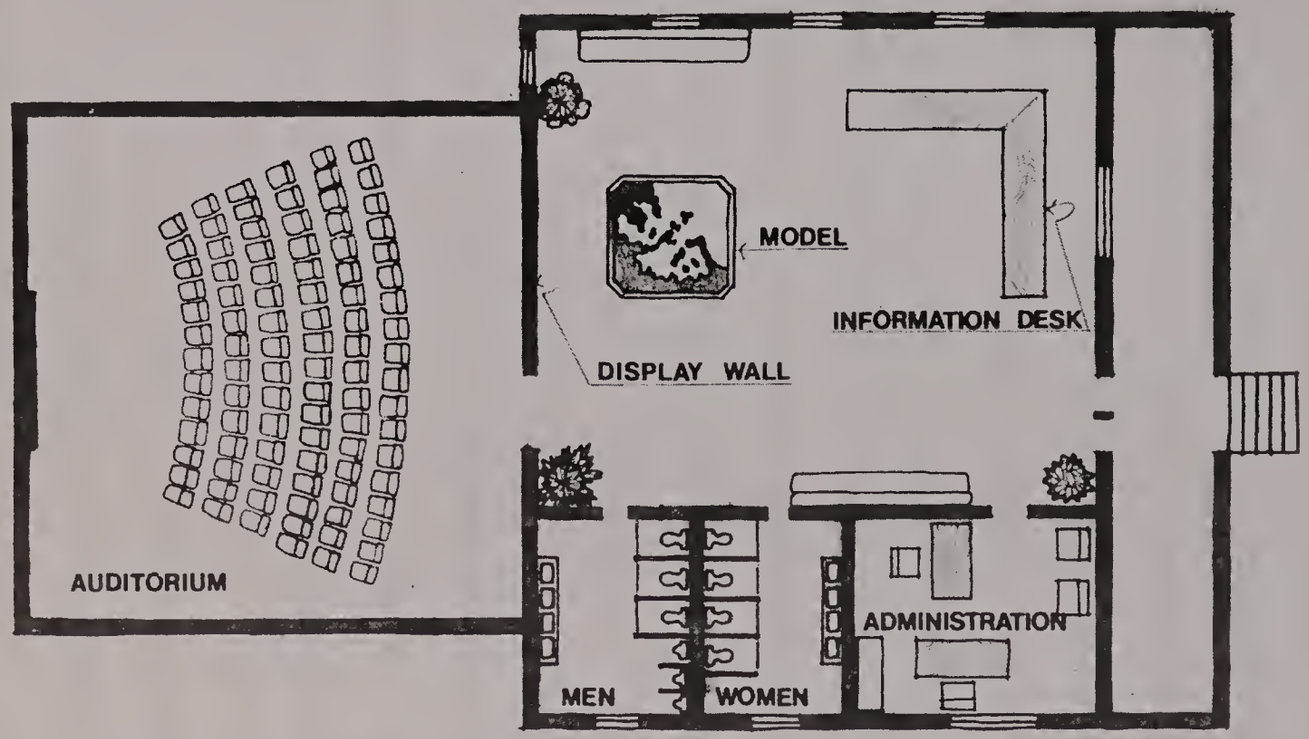
Plans. These three Islands are designed to complement each other and operate as a single, recreational unit. The three islands are linked by a 50 passenger ferry operating on a frequent schedule. The plans emphasize the most important natural or man-made factors of each Island. George's Island is dominated by the importance of the National Historic Site, Fort Warren. The most important characteristic of Gallop's Island is its capacity to hold relatively large groups of people for purposes of active recreation with minimal loss of valuable natural environment. Lovell's Island has several natural features that are emphasized by the plan. It has some of the finest beach areas in the Harbor and natural areas that are especially suited for small family campsites. It, too, has fortifications that are of special historic interest.

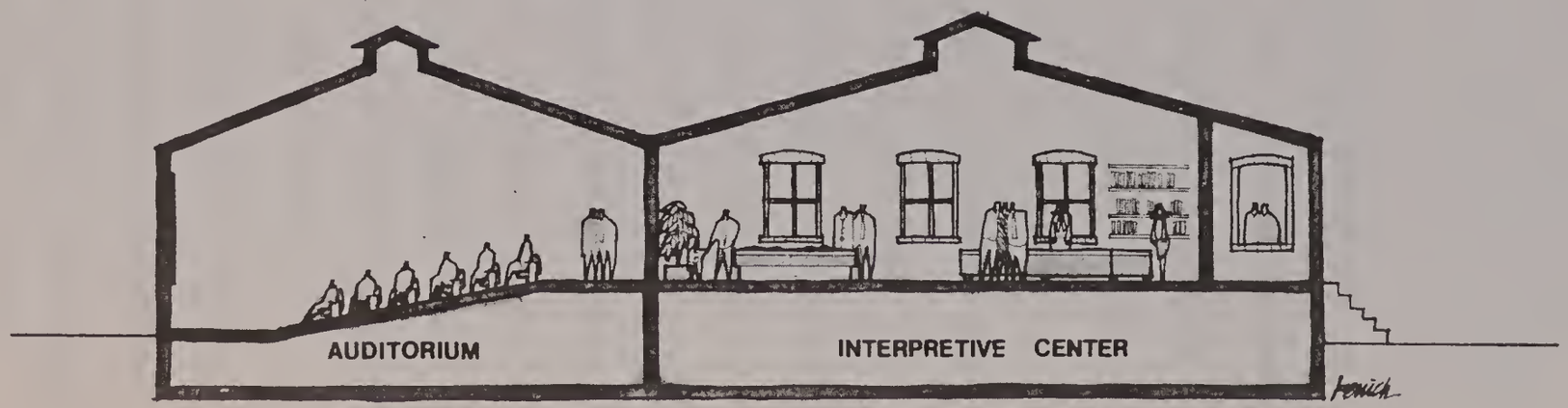
GEORGE'S ISLAND

Plan. The plan for George's Island emphasizes the historic man-made resource of Fort Warren and the Island's role as a major stop on the Boston Nantasket ferry "spine". Other important features include a military museum, a small swimming beach, and facilities for family picnics.

The major Island Visitor Center for the Brewster Islands and the Quincy Bay Sub-System is located in the brick Army building near the ferry landing and boat dock. The building can be easily renovated to house an Island information center, waiting room, rest rooms, offices, conference rooms, an auditorium, and small refreshment stand. The waiting room space would serve as a reception and information center for the Island providing descriptive material and maps on George's, Gallop's and Lovell's Islands, the Brewster Island group, and the Quincy Bay shoreline. Static displays and photo murals would help illustrate the Islands man-made and natural points of interest. The auditorium presentation, scheduled every half hour during periods of peak visitation, would include a general orientation to the Harbor Islands Park, which would be supplemented by more specific information on George's, Gallop's, Lovell's, Great Brewster, Middle Brewster, Calf, Outer Brewster, Little Brewster, Little Calf, the Graves, Green, and Hangman Islands. The audio-visual presentation would include histories of the islands and surrounding shoreline, important

VISITOR CENTER





natural features, and the conservation and recreation programs which exist on each of the islands in the Sub-System. Two or three offices and small conference rooms located on the second floor would be used by Island personnel for administration purposes and for special meetings of small groups.

Fort Warren offers one of the finest opportunities for a dramatic, educational experience on the East Coast of the United States. As a man-made resource it is an outstanding and unique example of mid-nineteenth century military architecture. It is a reminder of the personalities and events of one of the most important turning points in our national history - the Civil War.

The Fort is in need of major and costly renovation and restoration. Many of the rooms need to be restored and refurnished to recreate the Civil War appearance. A military museum with photographs, and personal military paraphernalia would help illustrate and add to our understanding of history. Fiberglass reconstructions of some of the Fort's 10 and 12 inch disappearing rifles as well as Civil War guns would add to the comprehension of the evolution of military history. The restorations of Fort McHenry in Baltimore, Fort Sumter in North Carolina, and El Morro in Puerto Rico provide examples of successful restoration programs conducted by the National Park Service. Guided tours, pageants, parades, re-inactments of historic events, and special educational programs would all add to the value of this fantastic historic resource. Immediate repairs of the breached seawall are necessary to arrest the erosion on the east side of the Island.

The Metropolitan District Commission is contemplating a major renovation program for Fort Warren and the remainder of the Island. This program, as presently understood, is consistent with the Comprehensive Plan to the extent that it would result in an Island environment of historic significance.

The use of the Island should emphasize and enhance the appreciation of its historic significance. No provisions are made in the plan for recreational activities that are totally unrelated to the Island's historic character. A very small swimming beach is located on the shore just north of the ferry dock. This area is suitable for an informal beach, but those visitors coming to the Island should be encouraged to swim on Lovell's or Gallop's Island. General landscaping and some new tree planting will improve the grounds and provide shade.

George's Island should be an integral part of the many sight-seeing tours of Boston and its environs. It is a logical addition to the Freedom Trail and an extension of the City of Boston's planned "Walk to the Sea."

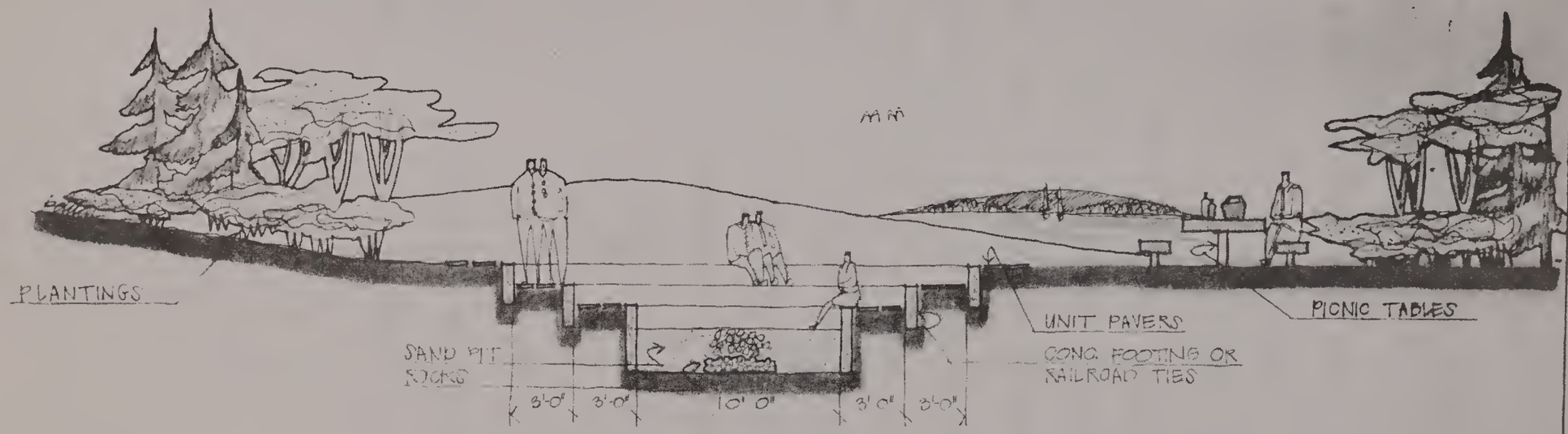
GALLOP'S ISLAND

Plan. The plan for Gallop's Island emphasizes its role as an Island recreation facility, especially designed to accommodate group day outings. Important features include a swimming beach, grass play-fields, two picnic areas, three specially designed clambake sites, a paved area for court games, and a multi-purpose pavillion with a refreshment stand and outdoor dining area.

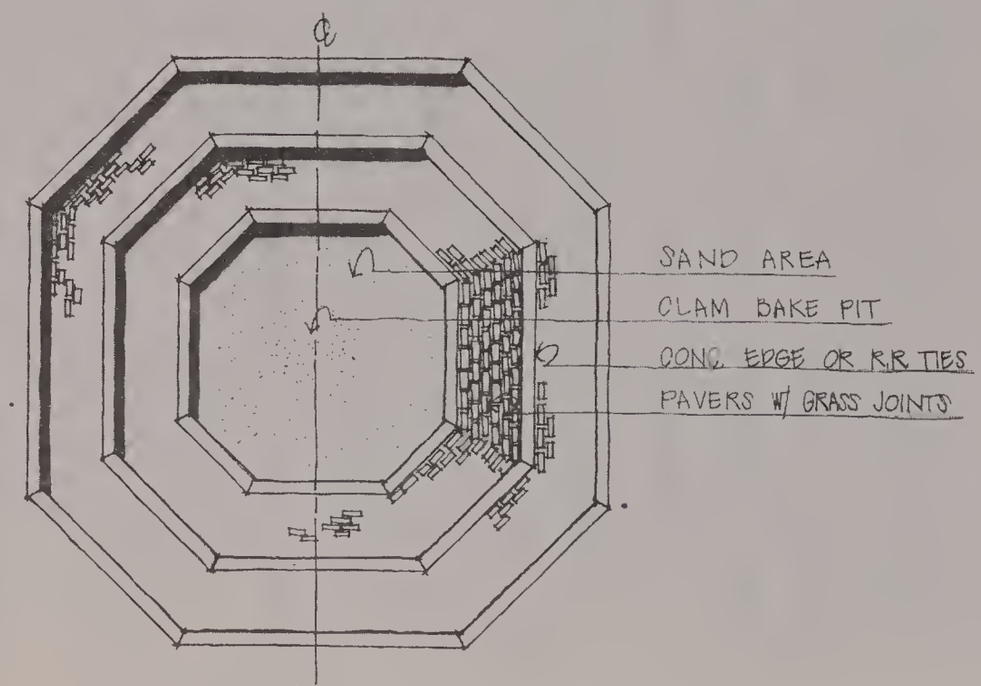
The existing dock is rehabilitated, in the plan, to accommodate the 50 passenger ferries and charter boats. Dock space at floats is provided for 30 small boats. Overnight docking with water and electricity for transients is available on a fee basis. A small mooring area for larger crafts is provided about 220 yards off the southern shore of the Island.

Adjacent to the dock is a landscaped quay with a large multi-purpose pavillion and the island's comfort station and bathhouse. This building contains an island interpretive center, information on facilities, island and marina administration offices and quarters for resident seasonal staff, as well as a large room suitable for meetings or small group gatherings. The cafe, located in the Pavillion, is provided with s terrace for outdoor dining, with views toward Long Island Head and the City skyline in the distance and toward George's Island.

CLAM BAKES



SECTION 1/4" = 1'-0"



PLAN 1/4" = 1'-0"

A fine sandy beach for approximately 100 swimmers is available east of the dock. The comfort station and bathhouse is located near the beach. Directly adjacent to this beach is a picnic area for small groups with about 15 tables and fireplaces scattered in the thick growth of trees.

An area designed for large groups has been provided on the drumlin just northwest of the pavillion. Three separate "clambake pits" are provided for catered or organized group cookouts. Each "pit" area is designed to accommodate up to 100 people and is provided with a central fire pit surrounded by raised seating. A cleared grassy area and about 60 tables complete this picnic area. Such a design will allow the area to sustain a high level of use with minimum maintenance and damage to the natural environment.

On the top of the drumlin is a flat grassed play area that is suitable for softball and other field games. An existing slab foundation is retained and improved for court games. The system of trails goes around the entire Island and special viewing areas with benches from which one can enjoy the views of the Harbor and surrounding Islands are provided.

LOVELL'S ISLAND

Plan. The plan for Lovell's Island emphasizes its important natural features and to a limited extent the massive, man-made fortifications. The major features of the plan include two swimming beaches, which take advantage of the best sand on the shoreline; a camprgound for individual and family camping enthusiasts; a large grass playfield, and partial restoration of the historic fortifications.

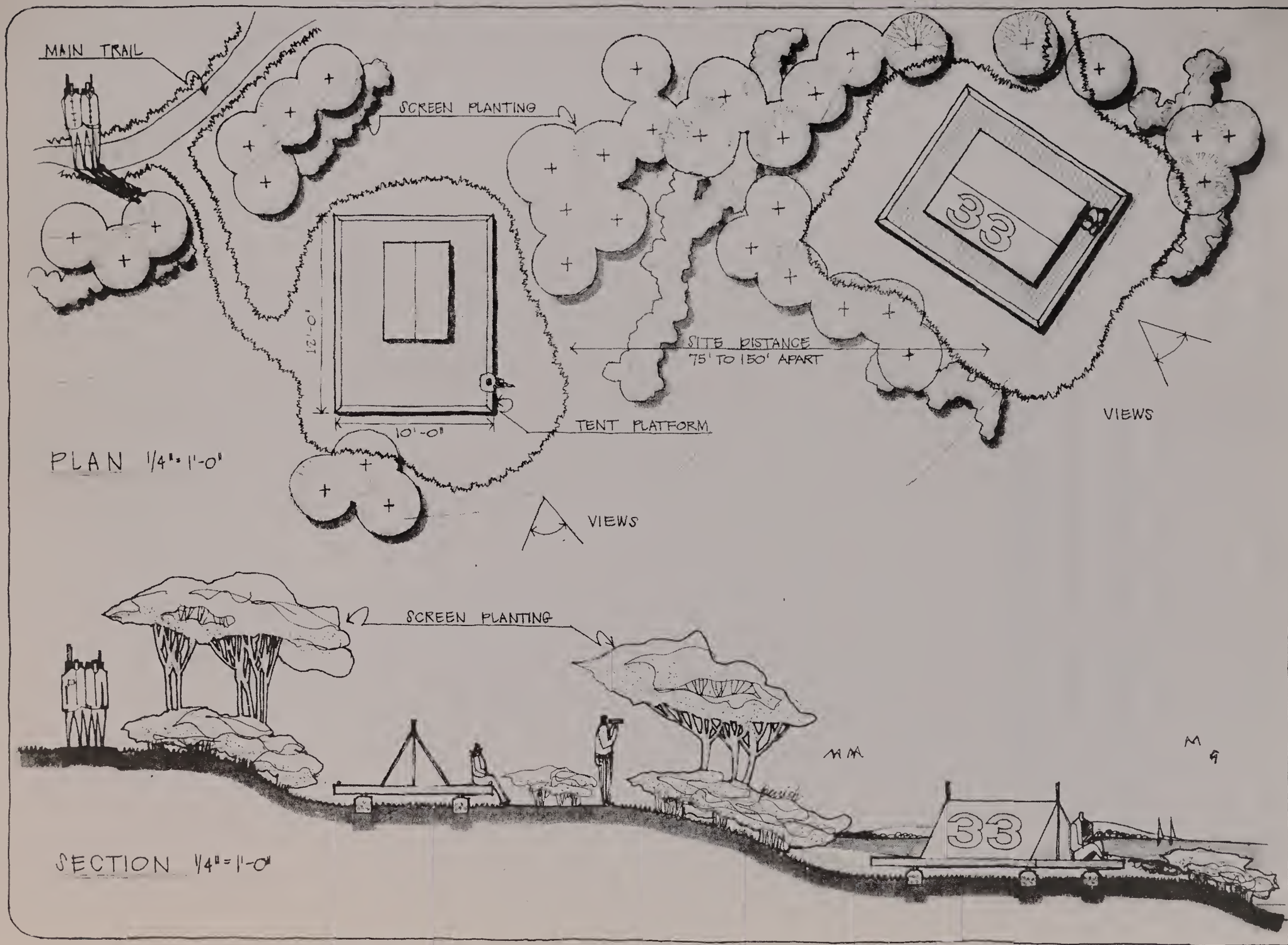
Both sides of Lovell's Island have beach areas which are suitable for swimming. Ample beach area is provided for 250 bathers and a bathhouse and comfort station is centrally located to serve both beaches. Two picnic areas with a total of 75 tables with fireplaces and a large grassy playfield are provided in the area between the swimming beaches.

The plan provides 30 individual campsites for family or individual tenting. Each site is equipped with a wooden tent platform, a stone fireplace, and a picnic table. These sites would be available on a fee basis and carefully supervised. The sites are widely separated for privacy and the tent platforms are designed to minimize the damage to the natural environment. Of course, the cutting of wood for campfires will be prohibited. Instead, charcoal should be carried on the Island and/or available at

SWIMMING BEACH

the Island administration building. A centralized comfort station is located in the campground area. Each campsite is isolated by screen planting and off the main trail on small "cul-de-sac-like" clearings. This is the only camping of its kind in the Harbor Island's Park; indeed it is one of the unique camping opportunities in New England. Island campsites have been successfully provided in more remote areas of New York State and along the Saint Lawrence Seaway. Lovell's Island offers a similar opportunity, largely because of the potential for highly controlled access and supervision, within five miles of downtown Boston. Its location as a part of the three Island group - George's, Gallop's and Lovell's - with frequent ferry shuttle service, will allow Island operating personnel to share work on all three Islands.

The historic fortifications provide a unique example of early twentieth century military architecture and an interesting contrast with the earlier nineteenth century Fort Warren on George's Island. Partial renovation of these structures includes new handrails and other safety precautions as well as fiberglass replicas of some of the guns which were once mounted in the massive installations. Interpretive signs tell the story of the use and importance of the guns, and during the peak season guided tours could add to the appreciation of the Fort's historic significance.



CAMPING - SINGLES

Because of the multiplicity of programs on Lovell's Island a full-time resident island administrator is required during the peak season of island use. The plan proposes the reuse of one of the military structures for the administration office and residence. Additional space for maintenance equipment and winter storage of supplies can be provided in the bunkers not open for tours.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

SEAWALLS AND REVETMENTS

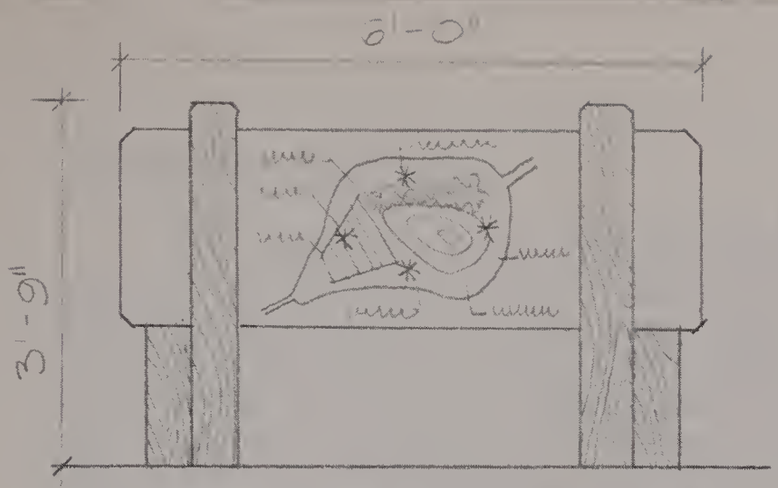
The building of seawalls and revetments has received some attention in this report as a means of retarding the natural forces of erosion. Each case of erosion on the Harbor Islands is distinct and would require further, more detailed study than that within the scope of this Plan. In several cases the very excellent cut granite seawalls, constructed in the mid 1800's are in need of repair. These repairs should be done as soon as possible or extensive damage to the Islands may occur. The plans have indicated general areas on the major Islands where erosion is severe and protection appears necessary and desirable. The selection of these areas has included considerations of the size and use of the Island and its value for the total Park System. In all cases the benefits have surpassed the costs of providing the protection. This is, of course, subject to more rigorous analysis of both the costs and benefits.

The designs of the protective seawalls should be compatible with the natural character and use of the Islands. Access to the beach areas below the seawalls should be provided and the top of the wall or rip-rap berm should accommodate walking trails and not block views.

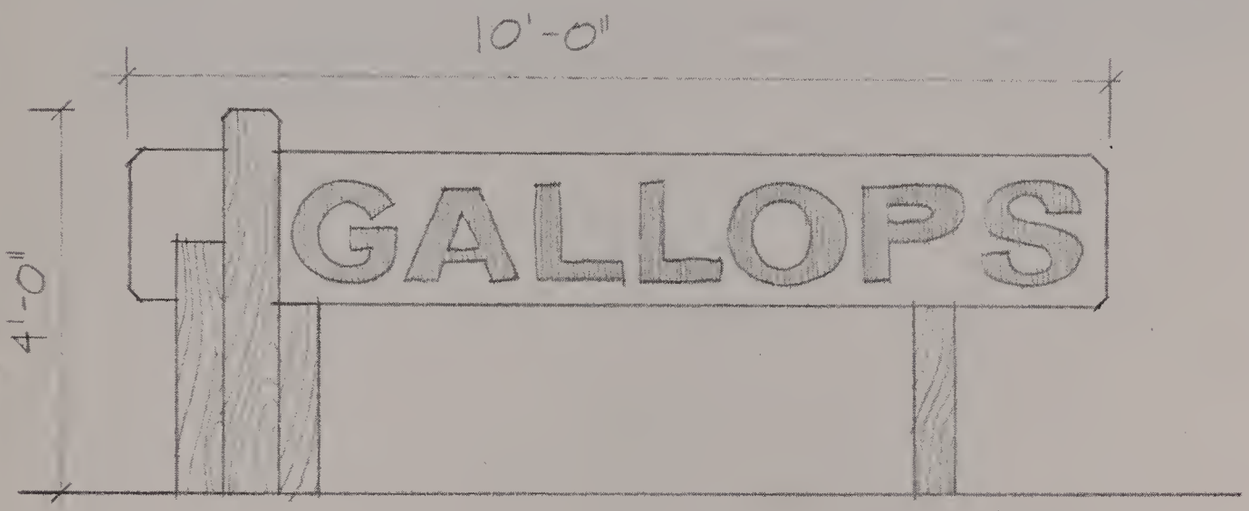
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

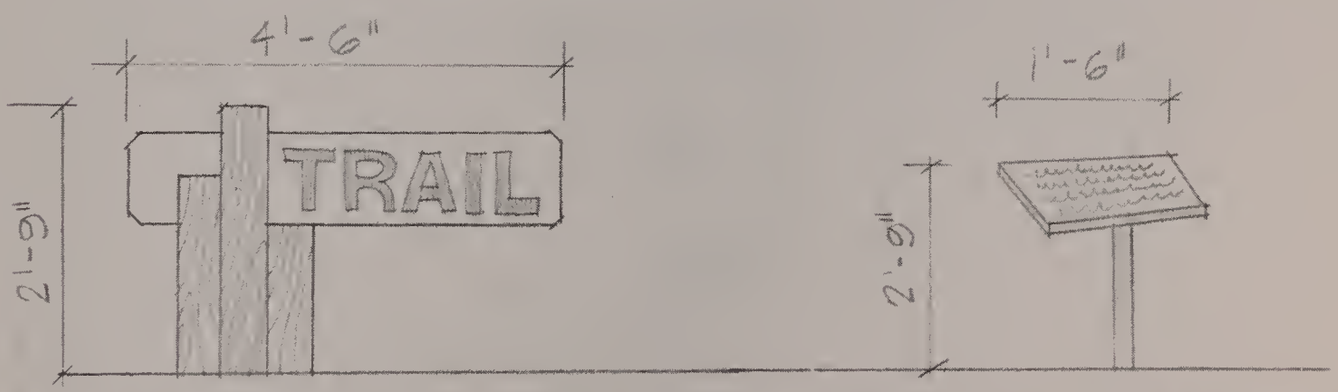
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

LOVELL'S, GALLOP'S, AND GEORGE'S ISLANDS

These three Islands compose a logical grouping for development, maintenance, and administration by the Metropolitan District Commission. The MDC currently owns Lovell's and George's Islands and have expressed considerable interest in acquiring Gallop's Island. An interagency agreement between the MDC and the Department of Natural Resources for the acquisition of Gallop's Island and for the development and operation of the Islands will provide a coordinated and complementary recreation complex. Maximum federal participation will be sought for the important restoration of historic Fort Warren.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

Fortification Renovation.

The renovation and restoration of the various historic forts in Boston Harbor presented a special cost estimation problem. While these structures represent a major man-made resource, they show the damage of years of neglect. Costs for their renovation were based on several assumptions. It was assumed that full restoration or renovation would be reserved for the most significant of the forts while limited steps would be taken at the majority of the sites. Limited renovation would include only such measures as would be necessary to render the forts safe and arrest the forces of decay. Additional more detailed cost estimates would be prepared during the implementation of the comprehensive plan for each island fort. On the basis of these assumptions two levels of cost were estimated. The first cost is for limited renovation, necessary to render the forts safe. This cost was based on published unit cost data and rough estimates of the number of units needing renovation at each fort. The second cost is for full renovation and was based on MDC experience on George's Island.

Utilities.

The provision of electricity and water to the Islands was also considered as a major cost that is subject to more detailed estimates during the implementation of the plans for those Islands to be serviced. The preliminary estimates of these costs were based on the analysis of a variety of alternatives and assumptions.

Gallop's, Lovell's, and George's Islands.

All three of these Islands are planned to be intensively used and will need water and electricity. George's Island is currently serviced with water from Hull by an old Army pipeline. This line has developed leaks over the years and attempts to repair it have proven that replacement is needed. Gallop's and Lovell's Islands currently have no water or electric services.

This preliminary analysis considered two alternatives for the provision of water and electricity to these three Islands. The first is to replace the existing service from Hull with new water and electricity lines, and extend those lines to Lovell's and Gallop's Islands. The second is to provide new service from Long Island. Because of the deep channel between Hull and George's Island supply from Long Island is considered more feasible and less costly. Preliminary investigations indicate that both water and electric capacity appear to be adequate and are more readily available on Long Island. A water main and electric cable running underwater from Long Island across Gallop's and Lovell's to George's Island are assumed for purposes of cost estimation. Final cost estimates and exact location depend on more detailed design.

Cost estimates for sewage disposal on these three Islands were based on the utilization of septic tanks. The exact location of leaching fields, exact costs, and final feasibility will depend on detailed engineering studies and designs.

GEORGES ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
4. Seawall	Current MDC Study Underway							
5. Pier				15	7,360			7,360
9. Bldg.								
Demo.				25	1,250			1,250
Rehab.				50	90,000			90,000
11. Trails								
Unpav. 3'		2,400LF	33/100LF	25		1,000		1,000
Paved 6'		21,000SF	.60/SF	25		12,000		12,000
Paved 8'		16,000SF	.60/SF	25		15,750		15,750
12. Planting								
Decid.	150		40EA	53	9,180			9,180
Evergr.	50		30EA	53	2,295			2,295
13. Fort Renova.				53	566,674	1,258,004	838,670	2,663,346
14. Equipment								
Picnic Tables	140		100EA	50	21,000			21,000
Trash Cont.	50		10EA	50	750			750
Drink. Fount.	6		700EA	50	6,300			6,300
Benches	25		200EA	50	7,500			7,500
Firepl.	75		120EA	50	13,500			13,500
15. Signs								
Large	1		3,000	25	3,750			3,750
Small	55		200	25	5,000	5,250	3,500	13,750
16. Trans. to Isl.				35	6,750	6,750	6,750	20,250
TOTAL					741,308	1,298,754	848,912	2,888,981

NOTE: Sewer, Water and Electricity included with Gallops Island Estimates.
Figures may not total due to rounding.

GALLOPS ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		15 ACRES	830/A	53	9,562	9,562		19,125
2. Dredging		3,900CY	550/CY	25	27,500			27,500
3. Barge Removal								
Steel	2		3,500EA	15	80,500			80,500
Timber	1		8,150EA	15	9,338			9,338
4. Seawall		12,800CF	2/CF	15	29,440			29,440
Backfill		594CY	2.50CY	15	1,702			1,702
5. Pier								
10'w.	1	190LF		15		32,430		32,430
18'w.	1	190LF		15	49,450			49,450
Retaining Wall	1	350LF		15	89,332			89,332
Float	11		1,700EA	15	15,088	6,417		21,505
Ramp	1		1,300EA	15	1,495			1,495
7. Paved Areas		9,600SF	.60/SF	15		6,900		6,900
8. Water		10,000LF		53		167,152		167,152
Sewer								
Septic System	2		15,213EA	53		46,551		46,551
Electric		10,000LF				186,354		186,354

GALLOPS ISLAND (Continued)

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
9. Bldg.								
Demo.				25	85,225			85,225
Const.								
Pavil.	1	2,000SF	40/SF	25	37,250	62,750		100,000
Bathhs.	1	1,080SF	70/SF	25	94,500			94,500
Wood Deck		46MFBM	1200/MFBM	25		69,000		69,000
10. Grading & Seeding				53	69,615	69,615		139,230
11. Trails								
Unpav.								
3'w.		1,600LF	33/100LF	25	663			663
6'w.		4,000LF	67/100LF	25	3,350			3,350
Paved								
6'w.		20,400SF	60/SF	25	8,934	6,316		15,250
8'w.		8,000SF	60/SF	25	6,000			6,000
12. Planting								
Decid.	100		40EA	53	3,060	3,060		6,120
Evergr.	75		30EA	53	1,721	1,722		3,443
14. Equipment								
Drinking Fount.	2		700EA	50	1,050	1,050		2,100
Picnic Table	75		100EA	50	5,625	5,625		11,250
Trash Cont.	25		10EA	50	188	187		375
Firepl.	75		120EA	50	6,750	6,750		13,500
Clambake	3		2,000EA	50	4,500	4,500		9,000
15. Signs								
Large	1		3,000EA	25	3,750			3,750
Small	15		200EA	25	2,250	1,500		3,750
16. Trans. to Isl.				35	9,450	9,450		18,900
TOTAL					657,288	696,891		1,354,179

NOTE: Figures may not total due to rounding.

LOVELLS ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		7A	830/A	53	8,874			8,874
3. Barge Remov.	1		3,500EA	15			40,250	40,250
4. Seawall		5,400CF	2/CF	15	12,420			12,420
5. Pier-Float	2		1,700EA	15	3,910			3,910
Ramp	1		1,300EA	15	1,495			1,495
8. Sewer				53	46,512			46,512
9. Bldg.								
Demo.				25	26,400			26,400
Const.								
Bathhs.	2	1,080SF	70/SF	25		189,000		189,000
Shelter	1	1,000SF	10/SF	25		12,500		12,500
10. Grading & Seeding		30,000SY		53	37,944	9,486		47,430

LOVELLS ISLAND (Continued)

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
11. Trails								
Unpav. 3'		3,800LF	33/100LF	25		1,563		1,563
Unpav. 6'		8,500LF	67/100LF	25		7,125		7,125
12. Planting								
Decid.	200		40EA	53	12,240			12,240
Evergr.	100		30EA	53	1,224	3,366		4,590
13. Fort Renov.				53	162,822	97,920	64,902	325,645
14. Equipment								
Camp-sites	30		900EA	50	20,250	20,250		40,500
Drink Fount.	4		700EA	50	2,100	2,100		4,200
Picnic Tables	75		100EA	50	5,625	5,625		11,250
Trash Cont.	20		10EA	50	150	150		300
Fire-pl.	75		120EA	50	6,750	6,750		13,500
15. Signs								
Large	1		3,000EA	25	4,500			4,500
Small	25		200EA	25	3,500	2,000		5,500
16. Trans. to Isl.					4,725	4,725	4,725	14,175
TOTAL					361,441	362,559	109,877	833,878

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
George's (Maximum Daily Use - 1,500 Persons)			
Historic Fort Visitation	100,000	$6.00	$600,000
Swimming	5,000	2.00	10,000
Fishing	2,000	3.00	6,000
Picnicking	5,000	2.00	10,000
Boating	10,000	6.00	60,000
Hiking	10,000	2.00	20,000
			$706,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

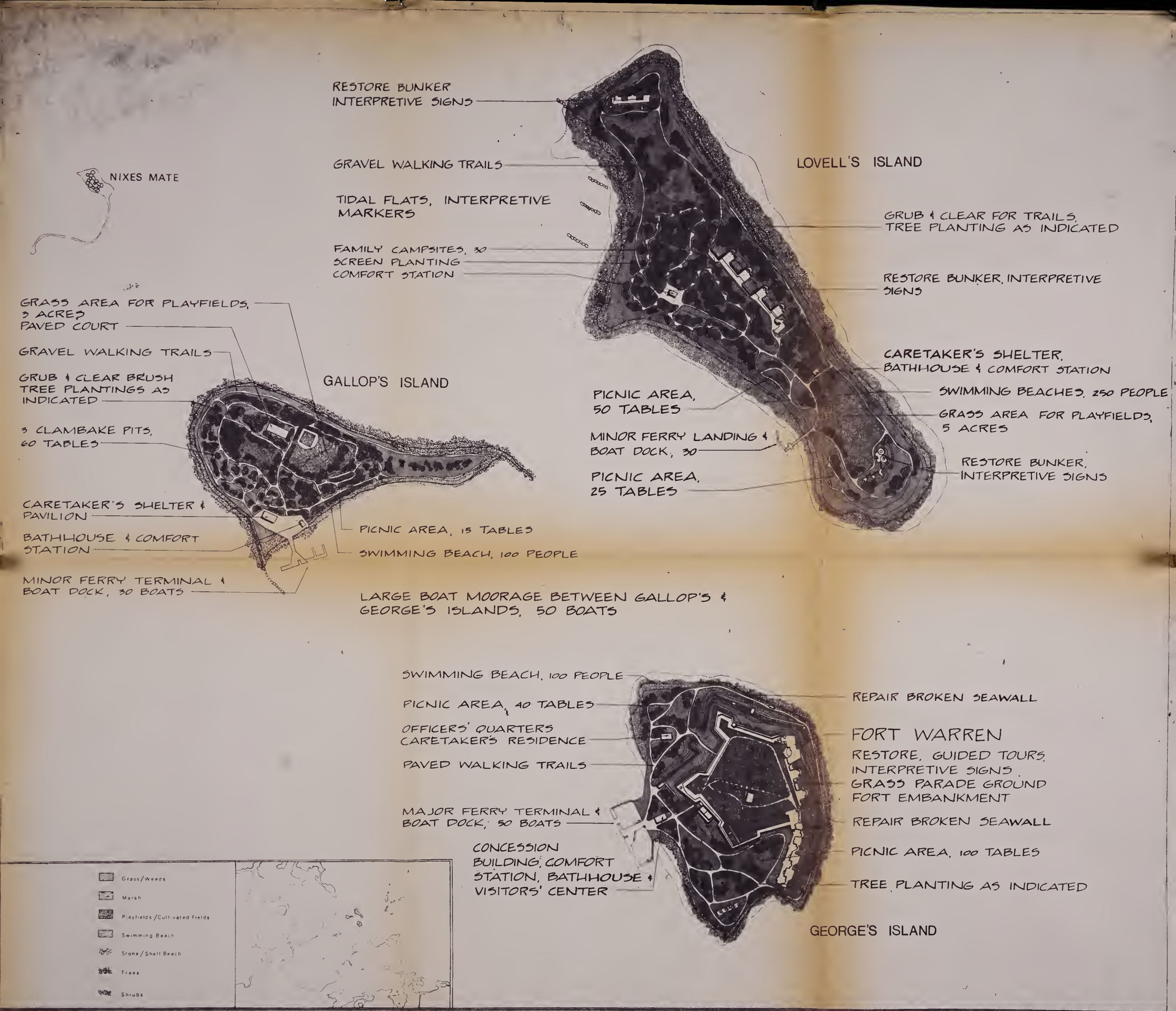
ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Gallop's (Maximum Daily Use - 300 Persons)			
Swimming	5,000	$3.00	$15,000
Play	5,000	2.50	12,500
Fishing	2,000	3.00	6,000
Picnicking	10,000	2.50	25,000
Boating	6,000	6.00	36,000
Hiking, Nature Walks	2,500	2.00	5,000
			$99,500

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Lovell's (Maximum Daily Use - 300 Persons)			
Family Camping	6,000	$5.00	$ 30,000
Play	10,000	2.00	20,000
Swimming	20,000	3.00	60,000
Historic Fort Visitation	10,000	4.00	40,000
Boating	5,000	6.00	30,000
Picnicking	5,000	2.00	10,000
Hiking, Nature Walks, etc.	10,000	2.00	20,000
			$210,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.


NIXES MATE
LOVELL'S ISLAND
RESTORE BUNKER INTERPRETIVE SIGNS
GRAVEL WALKING TRAILS
TIDAL FLATS, INTERPRETIVE MARKERS
FAMILY CAMPSITES, 30
SCREEN PLANTING
COMFORT STATION
GRUB & CLEAR FOR TRAILS, TREE PLANTING AS INDICATED
RESTORE BUNKER, INTERPRETIVE SIGNS
CARETAKER'S SHELTER, BATHHOUSE & COMFORT STATION
SWIMMING BEACHES, 250 PEOPLE
GRASS AREA FOR PLAYFIELDS, 5 ACRES
RESTORE BUNKER, INTERPRETIVE SIGNS
PICNIC AREA, 50 TABLES
MINOR FERRY LANDING & BOAT DOCK, 30
PICNIC AREA, 25 TABLES
GALLOP'S ISLAND
GRASS AREA FOR PLAYFIELDS, 3 ACRES
PAVED COURT
GRAVEL WALKING TRAILS
GRUB & CLEAR BRUSH TREE PLANTINGS AS INDICATED
3 CLAMBAKE PITS, 60 TABLES
CARETAKER'S SHELTER & PAVILION
BATHHOUSE & COMFORT STATION
MINOR FERRY TERMINAL & BOAT DOCK, 30 BOATS
PICNIC AREA, 15 TABLES
SWIMMING BEACH, 100 PEOPLE
LARGE BOAT MOORAGE BETWEEN GALLOP'S & GEORGE'S ISLANDS, 50 BOATS
SWIMMING BEACH, 100 PEOPLE
PICNIC AREA, 40 TABLES
OFFICERS' QUARTERS CARETAKER'S RESIDENCE
PAVED WALKING TRAILS
MAJOR FERRY TERMINAL & BOAT DOCK, 50 BOATS
CONCESSION BUILDING, COMFORT STATION, BATHHOUSE & VISITORS' CENTER
REPAIR BROKEN SEAWALL
FORT WARREN
RESTORE, GUIDED TOURS, INTERPRETIVE SIGNS
GRASS PARADE GROUND
FORT EMBANKMENT
REPAIR BROKEN SEAWALL
PICNIC AREA, 100 TABLES
TREE PLANTING AS INDICATED
GEORGE'S ISLAND
Grass/Weeds
Marsh
Playfields/Cultivated Fields
Swimming Beach
Stone/Shell Beach
Trees
Shrubs
LOVELL'S GALLOP'S and GEORGE'S ISLANDS
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN
N
0 200 400
Date 6/71
prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES
by
MAPC Metropolitan Area Planning Council

George's, Gallop's, and Lovell's Islands Support Documentation, 1973 March

The Brewsters Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

The Brewsters
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

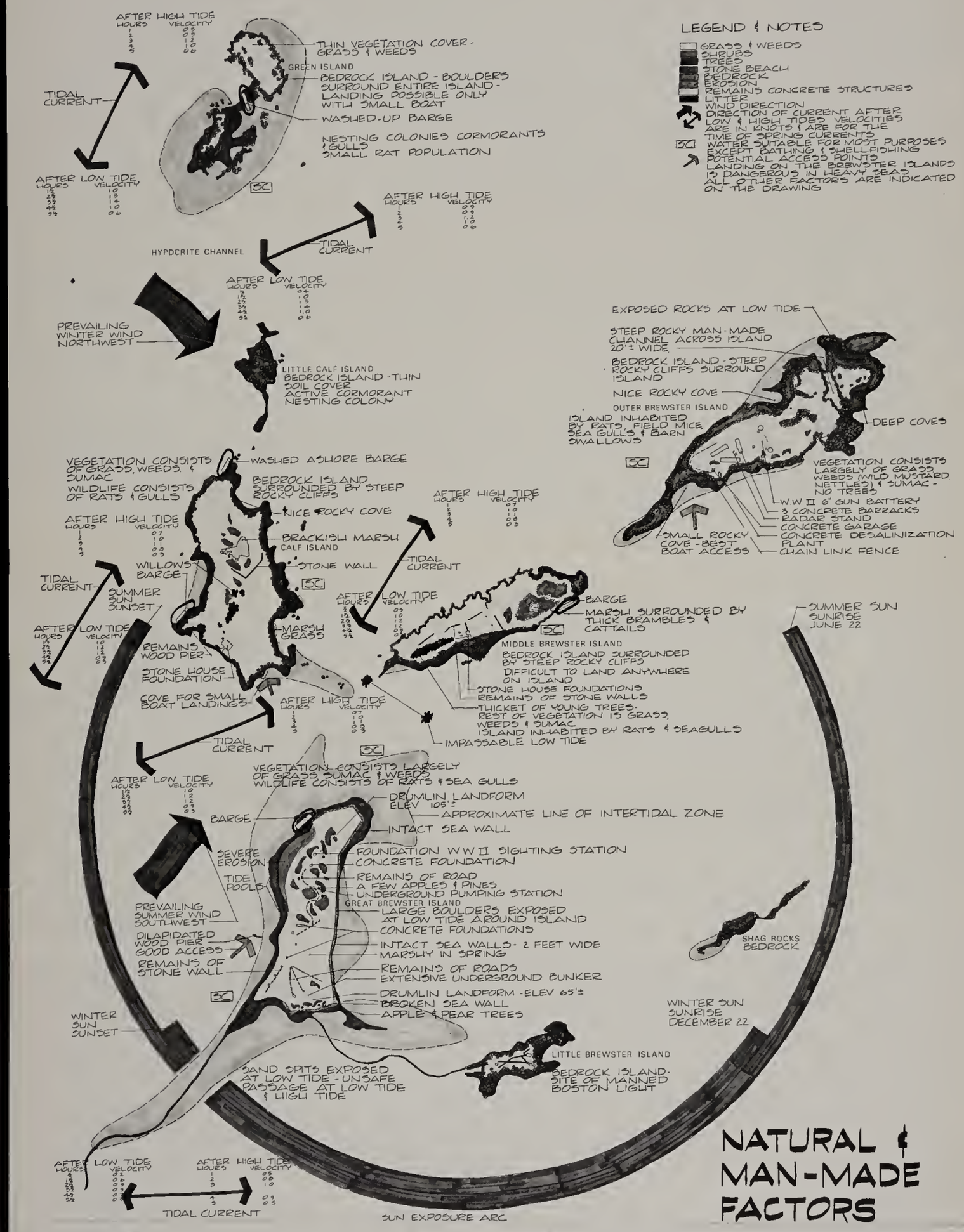
by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

THE BREWSTERS

The outermost islands of Boston Harbor are known collectively as the Brewsters. They include Great Brewster, Middle Brewster, Little Brewster, Outer Brewster, Calf, Little Calf, and Green Islands, Shag Rocks, and The Graves. With the exception of Great Brewster, which is a large drumlin, these islands are outcrops of solid bedrock. The islands are named in honor of Elder Brewster, the first preacher and teacher at Plymouth, and were granted to the Town of Hull in 1641.


LEGEND & NOTES
GRASS & WEEDS
SHRUBS
TREES
STONE BEACH
BEDROCK
EROSION
REMAINS CONCRETE STRUCTURES
LITTER
WIND DIRECTION
DIRECTION OF CURRENT AFTER LOW & HIGH TIDES VELOCITIES ARE IN KNOTS & ARE FOR THE TIME OF SPRING CURRENTS
SC WATER SUITABLE FOR MOST PURPOSES EXCEPT BATHING & SHELLFISHING
POTENTIAL ACCESS POINTS
LANDING ON THE BREWSTER ISLANDS IS DANGEROUS IN HEAVY SEAS
ALL OTHER FACTORS ARE INDICATED ON THE DRAWING
AFTER HIGH TIDE
HOURS VELOCITY
AFTER LOW TIDE
HOURS VELOCITY
TIDAL CURRENT
THIN VEGETATION COVER - GRASS & WEEDS
GREEN ISLAND
BEDROCK ISLAND - BOULDERS SURROUND ENTIRE ISLAND - LANDING POSSIBLE ONLY WITH SMALL BOAT
WASHED-UP BARGE
NESTING COLONIES CORMORANTS & GULLS
SMALL RAT POPULATION
HYPOCRITE CHANNEL
PREVAILING WINTER WIND NORTHWEST
LITTLE CALF ISLAND
BEDROCK ISLAND - THIN SOIL COVER
ACTIVE CORMORANT NESTING COLONY
EXPOSED ROCKS AT LOW TIDE
STEEP ROCKY MAN-MADE CHANNEL ACROSS ISLAND 20'± WIDE
BEDROCK ISLAND - STEEP ROCKY CLIFFS SURROUND ISLAND
NICE ROCKY COVE
OUTER BREWSTER ISLAND
ISLAND INHABITED BY RATS, FIELD MICE, SEA GULLS & BARN SWALLOWS
DEEP COVES
VEGETATION CONSISTS LARGELY OF GRASS, WEEDS (WILD MUSTARD, NETTLES) & SUMAC - NO TREES
W.W II 6" GUN BATTERY
3 CONCRETE BARRACKS
RADAR STAND
CONCRETE GARAGE
CONCRETE DESALINIZATION PLANT
CHAIN LINK FENCE
SMALL ROCKY COVE - BEST BOAT ACCESS
VEGETATION CONSISTS OF GRASS, WEEDS, & SUMAC
WILDLIFE CONSISTS OF RATS & GULLS
WASHED ASHORE BARGE
BEDROCK ISLAND SURROUNDED BY STEEP ROCKY CLIFFS
NICE ROCKY COVE
BRACKISH MARSH
CALF ISLAND
STONE WALL
WILLOWS
BARGE
SUMMER SUN SUNSET
MARSH GRASS
REMAINS WOOD PIER
STONE HOUSE FOUNDATION
COVE FOR SMALL BOAT LANDINGS
BARGE
MARSH SURROUNDED BY THICK BRAMBLES & CATTAILS
MIDDLE BREWSTER ISLAND
BEDROCK ISLAND SURROUNDED BY STEEP ROCKY CLIFFS
DIFFICULT TO LAND ANYWHERE ON ISLAND
STONE HOUSE FOUNDATIONS
REMAINS OF STONE WALLS
THICKET OF YOUNG TREES - REST OF VEGETATION IS GRASS, WEEDS & SUMAC
ISLAND INHABITED BY RATS & SEAGULLS
IMPASSABLE LOW TIDE
SUMMER SUN SUNRISE JUNE 22
VEGETATION CONSISTS LARGELY OF GRASS, SUMAC & WEEDS
WILDLIFE CONSISTS OF RATS & SEA GULLS
DRUMLIN LANDFORM ELEV 105'±
APPROXIMATE LINE OF INTERTIDAL ZONE
INTACT SEA WALL
FOUNDATION WW II SIGHTING STATION
CONCRETE FOUNDATION
REMAINS OF ROAD
A FEW APPLES & PINES
UNDERGROUND PUMPING STATION
GREAT BREWSTER ISLAND
LARGE BOULDERS EXPOSED AT LOW TIDE AROUND ISLAND
CONCRETE FOUNDATIONS
INTACT SEA WALLS - 2 FEET WIDE
MARSHY IN SPRING
REMAINS OF ROADS
EXTENSIVE UNDERGROUND BUNKER
DRUMLIN LANDFORM - ELEV 65'±
BROKEN SEA WALL
APPLE & PEAR TREES
SEVERE EROSION
TIDE POOLS
PREVAILING SUMMER WIND SOUTHWEST
DILAPIDATED WOOD PIER GOOD ACCESS
REMAINS OF STONE WALL
SHAG ROCKS BEDROCK
WINTER SUN SUNRISE DECEMBER 22
WINTER SUN SUNSET
LITTLE BREWSTER ISLAND
BEDROCK ISLAND - SITE OF MANNED BOSTON LIGHT
SAND SPITS EXPOSED AT LOW TIDE - UNSAFE PASSAGE AT LOW TIDE & HIGH TIDE
SUN EXPOSURE ARC
NATURAL & MAN-MADE FACTORS
THE BREWSTERS
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN
N
prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES
by
mapc Metropolitan Area Planning Council

GREAT BREWSTER

Description and History. Privately-owned Great Brewster has an area of 23 acres and is the largest of the group. A large eroded drumlin, 100 feet high is its dominant natural feature.

There is little record of early activity on the Island, but at least one family farmed the Island in the 1800's. The City of Boston bought the Island in 1848 and turned it over to the Federal Government. Congress appropriated funds and a Quincy granite seawall was constructed around the north, east, and south sides of the Island to prevent further erosion. The seawall is still in good condition today.

The navigation aid, Bug Light was built on spidery stilts as a manned lighthouse in 1856. After a fire in 1930 it was rebuilt as an automatic light. It is located at the end of a long spit of sand which extends more than a mile southwest of the Island. At high-tide the spit is covered, but a low-tide it is possible to walk out almost to Bug Light.

During World War II a sophisticated bomb and chemical proof harbor mining casemate was constructed. This command post contained electronic equipment which controlled the operation of the Boston Harbor mine field in conjunction with other facilities on George's Island and Deer Island. On top of the drumlin at the northern end of the Island was a battery of 90mm rapid fire guns to protect

the Harbor against fast moving torpedo boats. Several observation and searchlight stations were part of the installation, and temporary buildings housed the men required to operate the facility. The remains of these buildings and ruins of an old dock are the major man-made features of the Island.

The growth on the Island is sparce. There are a few trees, but in general plants do not grow as fast as on the more protected inner Islands. Wild roses grow in profusion and provide impressive displays of color in the early summer with flowers, and in the late summer with fruits. Just off-shore there are several small tidal pools created in the rocks.

GREAT BREWSTER

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, Shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

MIDDLE BREWSTER ISLAND

Description and History. Privately-owned Middle Brewster Island is a high, rocky outcrop of about 12 acres. A small colony of fishermen established a settlement on the Island about 1840 and were the first inhabitants recorded. About 1871, the Island was purchased by Augustus Russ, a wealthy individual who built a large summer residence. He leased several lots for other summer residents. About 1890, Benjamin P. Cheny built a house on one of these lots, but moved to Calf Island after Russ refused to allow him to build an icehouse.

The Island shoreline is completely rocky with several steep cliffs dropping abruptly to the ocean. A thicket of small trees exists on the southwestern side of the Island and a fresh-water marsh, surrounded by brambles and cattails, exists on the eastern end. An extensive population of seagulls nest on the east end of the Island and numerous rodents feed along the shoreline. Several stone walls and masonry foundations indicate the location of the old summer homes.

MIDDLE BREWSTER

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

OUTER BREWSTER ISLAND

Description and History. Privately-owned Outer Brewster covers 17.5 acres and is the largest outcrop of solid bedrock in Boston Harbor. It was once known as Outward Island and is the most easterly Island in the Harbor. In 1799 the Island was purchased by Nathaniel Austin and remained in the family for many years. Arthur Austin, a son of the original owner is known to have quarried rock from the Island for building purposes. Several roads in Boston are believed to have been macadamized with aggregate from Outer Brewster Island. One report indicates that Austin intended to use the site of the quarry as a small boat harbor. A cove on the northeast end of the Island marks the site of the old quarry and proposed harbor.

The Island was acquired by the Federal Government and in 1941 the Army and the United States Engineer Department built Battery Jewell. This battery consisted of two 6 inch radar controlled guns and was a completely self-sufficient unit. Approximately 125 men were required to operate the battery and were housed in three splinter proof reinforced concrete barracks. The battery itself was constructed of reinforced concrete and was designed to be bomb and chemical proof. It was built into a man-made hill with several built-in tunnels and ammunition storage rooms. A radar unit, mounted on a 100 foot tower, could direct the fire of the guns with accuracy up to 15 miles. The installation had its own desalinization plant for fresh water supply. The site was deactivate in 1946 and the Island was sold as surplus in the early 1950's.

OUTER BREWSTER

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

Outer Brewster Island is edged with high cliffs of bedrock. These cliffs and the views are very striking and contrast dramatically with the more protected and placid islands in the Harbor. There are several acres of grass and brush, but no trees on the Island. An extensive population of seagulls nest on the Island and numerous rodents feed along the shoreline. The concrete barracks and Battery Jewell provide silent testimony to the Islands' importance during World War II.

LITTLE BREWSTER ISLAND

Description and History. Little Brewster Island is the site of historic Boston Light. The original light was built in 1716 and destroyed and rebuilt several times before the present structure was constructed in 1783. The 98 foot high tower is manned and operated by the Coast Guard and has been declared a National Historic Landmark. The Island is entirely federally owned, but is not currently open to public visits.

CALF ISLAND

Description and History. Privately-owned Calf Island was once known as North Brewster Island. For many years the Island was inhabited by a small colony of lobstermen. In 1883 the Island was the scene of illegal Sunday boxing matches.

The Island changed hands many times. In 1902 Benjamin P. Cheny and his actress wife, Julia Arthur, purchased the Island and constructed a magnificent house on a cliff overlooking the south-eastern shore of the Island. A large two-story boat house and dock was part of the complex.

The Federal Government purchased the Island during the First World War, but there is no record of military use of the Island until World War II. During World War II a search light was installed on Calf Island and the 14 men assigned to operate the light resided in the former boat house of the Cheny-Arthur estate. Today the only remains of these buildings are the ruins of foundations and two stone chimneys. The main house and boat house were destroyed by fire after the war. In fact, the roof of one gazebo-style building overlooking the Harbor was destroyed by a fire set by vandals during the summer of 1971. The Island has an extensive population of gulls and rats.

CALF & LITTLE CALF ISLANDS

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

LITTLE CALF ISLAND

Description and History. Little Calf Island is a less than one acre outcrop of bedrock about 100 yards north of Calf Island. It has never been inhabited by man but is an active cormorant nesting colony which should be conserved as a natural area.

GREEN ISLAND

Description and History. Privately-owned Green Island is an outcropping of bedrock covering less than 2 acres. Records indicate that the Island is named for Joseph Green, a well known merchant, who owned the Island in colonial times. The Island was the home of a succession of lobstermen as well as a hermit. There is very little soil or plant life on the Island but it is an active nesting area for gulls and cormorants.

THE GRAVES

Description and History. The Federal Government built Graves Light on the rocky outcrop known as Graves Ledge in 1905. The Graves was named in honor of Thomas Graves, a vice-admiral of Winthrop's fleet in the 1600's. The light house, as an aid to navagation, marks the main entrance to Boston Harbor and the most northerly point on the group of Islands known as the Brewsters.

SHAG ROCKS

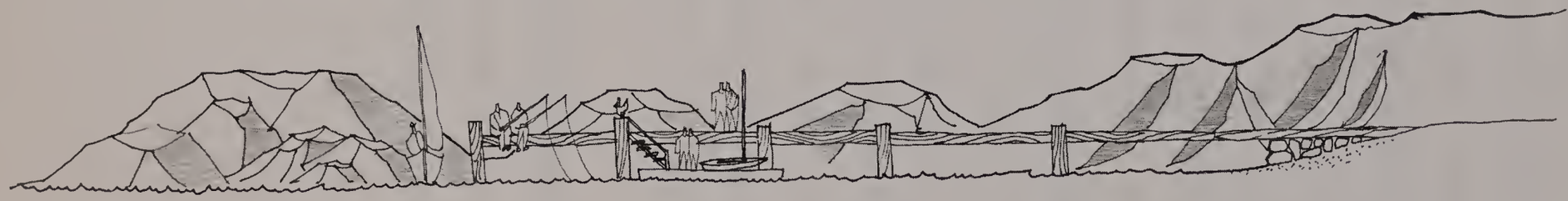
Description and History. Shag Rocks, once known as Egg Rocks, are a group of formidable bedrock ledges, that were once very dangerous to mariners. Today they are active gull and cormorant nesting areas.

THE BREWSTER ISLANDS

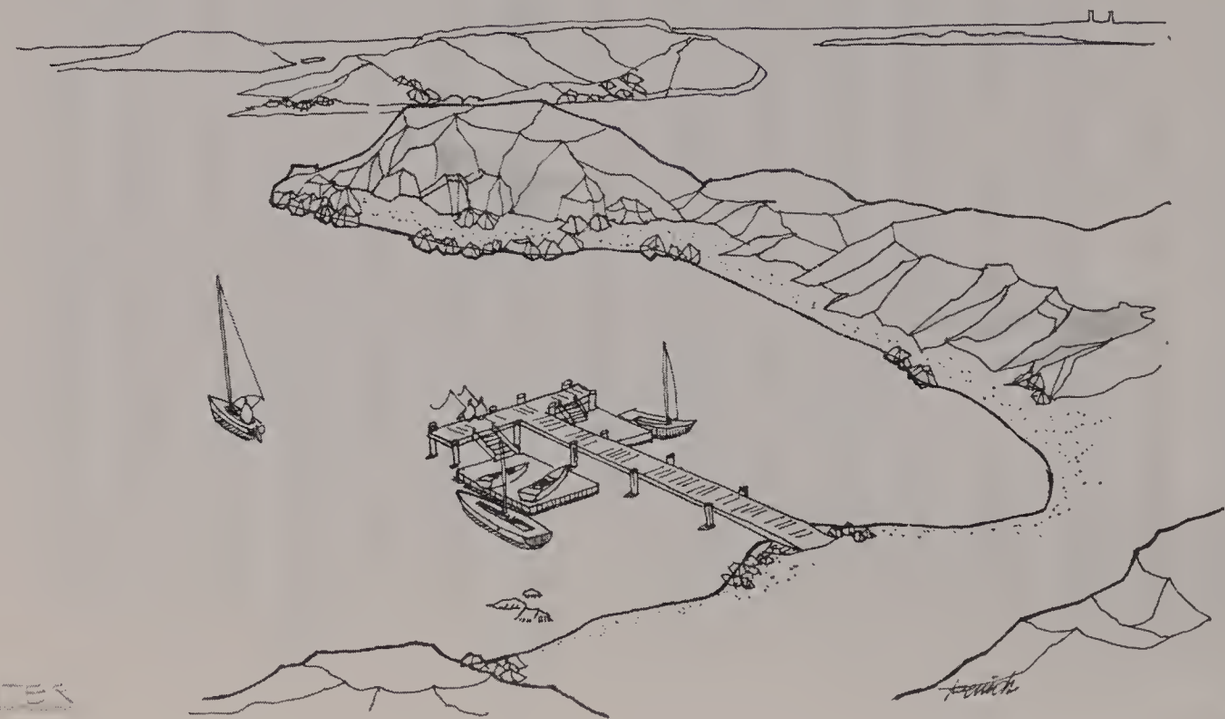
Plans. The plan for the Brewster Islands emphasizes the maintenance and improvement of the unique natural quality of their scenic environment. The creation of a Boston Harbor Outer Sanctuary, composed of the Islands, together with adjacent water, islets, rocks and flats will assure the preservation and natural management of this valuable natural resource. Such a recommendation was made in the final report of the Special Commission on the Boston Harbor Islands and it is restated as an integral part of this Comprehensive Plan for the Boston Harbor Islands. Other important features of the Plan include 27 "primitive" campsites assigned equally to Calf, Middle Brewster, and Outer Brewster Islands; an underwater park for scuba diving and exploration of the old shipwrecks and unique marine environment; trails and self-guided nature walks with interpretive signs to describe the ecological and geological features of the Islands; and minor restoration of the fortifications on Great Brewster and Outer Brewster Islands.

Nine primitive campsites are located on each of the following islands - Calf, Middle Brewster, and Outer Brewster. The campsites are intended for island wilderness camping by individuals or very small groups with previous reservations. They consist of a small clearing located off the main trail system and are sited to take maximum advantage of vistas and the protection offered by the natural topography. No fresh water is to be provided on the Islands and chemical toilets are located adjacent to the boat docks.

BOAT LANDING



PIER SECTION no scale



OUTER SHELTER

A shelter is located next to the dock for emergency use and flag poles and flares are recommended for signals in case of emergency.

The Brewster Islands provide one of the most unique marine environments on the Massachusetts coast. They provide a highly accessible marine habitat that has been the subject of several studies of marine biology and a favorite site for recreational diving. Numerous shipwrecks, dating back to an unidentified brig which was wrecked off Boston Light in 1768, add interest to underwater exploration. More complete study of the potential for developing an underwater park should be undertaken before specifying the exact programs to be included. The designation of an underwater park for this area is consistent with the concept of the Boston Harbor Outer Sanctuary. Possible programs include a marine naturalist station on Great Brewster Island, which would provide introductory demonstrations on marine ecology with tide pool and shoreline walks. Underwater tours might be conducted for scuba divers.

Self-guided trails are provided with interpretive markers to explain the unique outer harbor natural environment, the biological communities and such natural forces as erosion.

Erosion is a natural force, dramatically evident in the Brewster Islands. A seawall on Great Brewster is recommended to arrest severe erosion occurring on the western face of the drumlin. Extensive engineering studies will be required to determine the design of this seawall and the exact costs and benefits of stopping the erosion. The reaction to such natural forces as erosion should be carefully evaluated. While a part of Great Brewster Island is eroding, other natural forces, tidal currents, are depositing the eroded material on the beaches of other Islands or the mainland shoreline. The building of the seawall may achieve the goal of stopping the erosion, but it might also deplete an important supply of beach sand.

Small boat docks, emergency shelters, and chemical toilets are provided on each of the four larger islands - Outer Brewster, Middle Brewster, Great Brewster and Calf Islands. They are arranged to facilitate maintenance and control of island use.

The Boston Harbor Outer Sanctuary would be managed as a conservation area emphasizing its wild, marine dominated environment. Cormorant and gull nesting areas will be protected during the nesting season and where necessary wildlife management practices will be utilize to control rat populations.

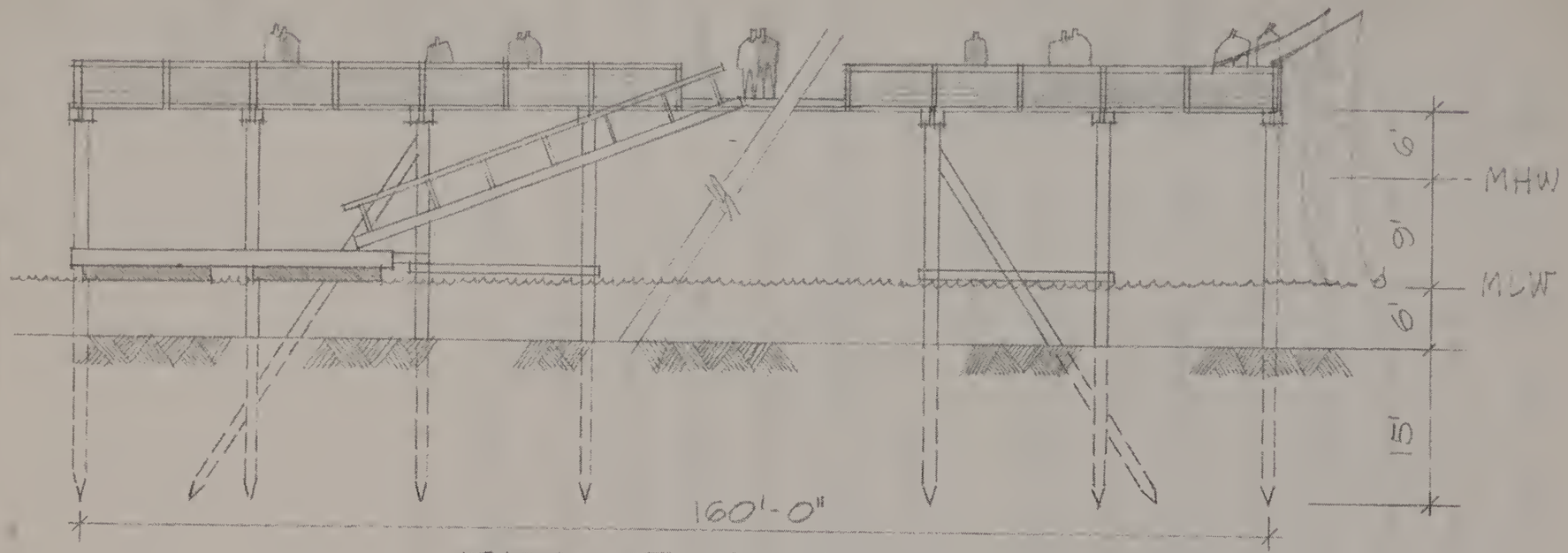
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

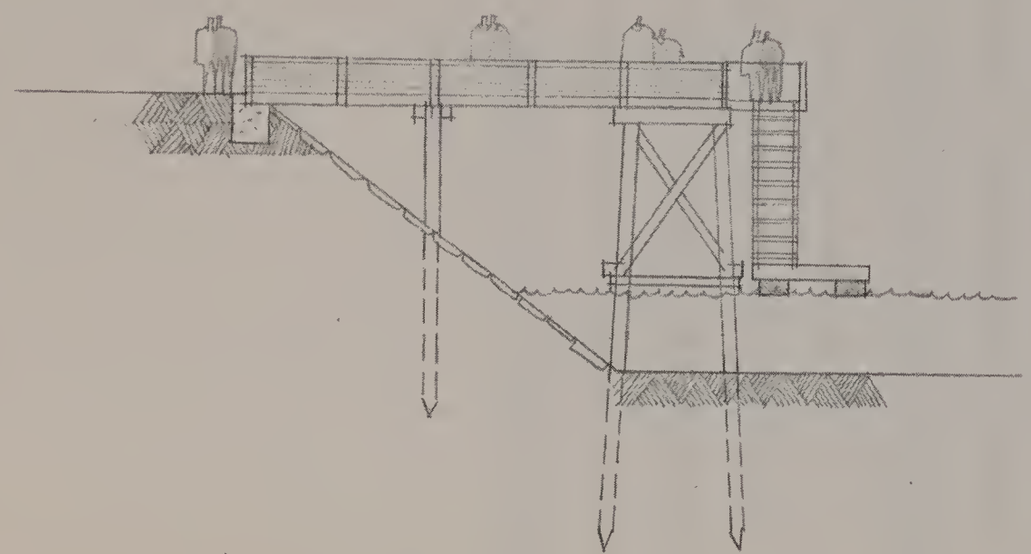
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

COMFORT STATIONS

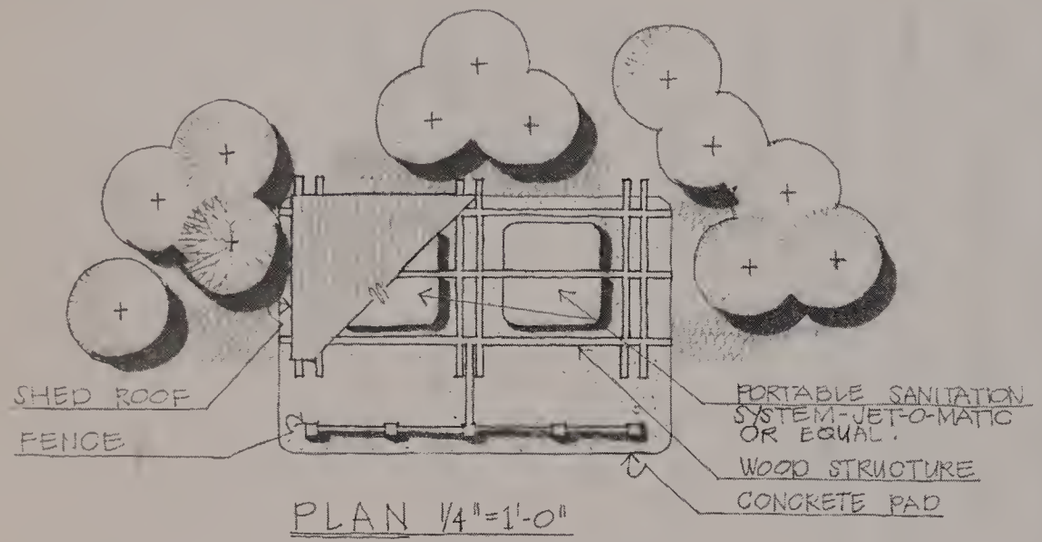
Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

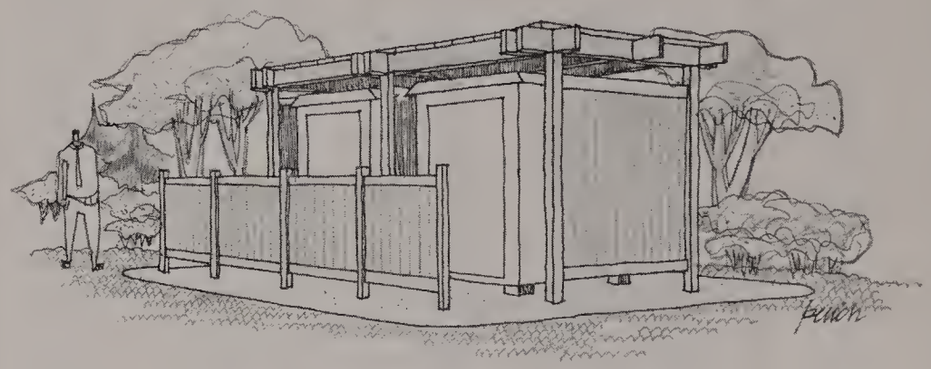
Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

COMFORT STATION



PLAN 1/4"=1'-0"



FRONT ELEVATION 1/4"=1'-0"

Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

SEAWALLS AND REVETMENTS

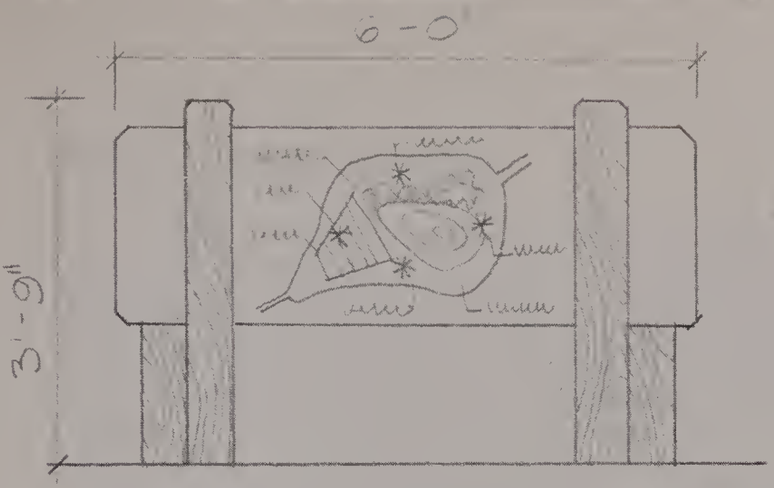
The building of seawalls and revetments has received some attention in this report as a means of retarding the natural forces of erosion. Each case of erosion on the Harbor Islands is distinct and would require further, more detailed study than that within the scope of this Plan. In several cases the very excellent cut granite seawalls, constructed in the mid 1800's are in need of repair. These repairs should be done as soon as possible or extensive damage to the Islands may occur. The plans have indicated general areas on the major Islands where erosion is severe and protection appears necessary and desirable. The selection of these areas has included considerations of the size and use of the Island and its value for the total Park System. In all cases the benefits have surpassed the costs of providing the protection. This is, of course, subject to more rigorous analysis of both the costs and benefits.

The designs of the protective seawalls should be compatible with the natural character and use of the Islands. Access to the beach areas below the seawalls should be provided and the top of the wall or rip-rap berm should accommodate walking trails and not block views.

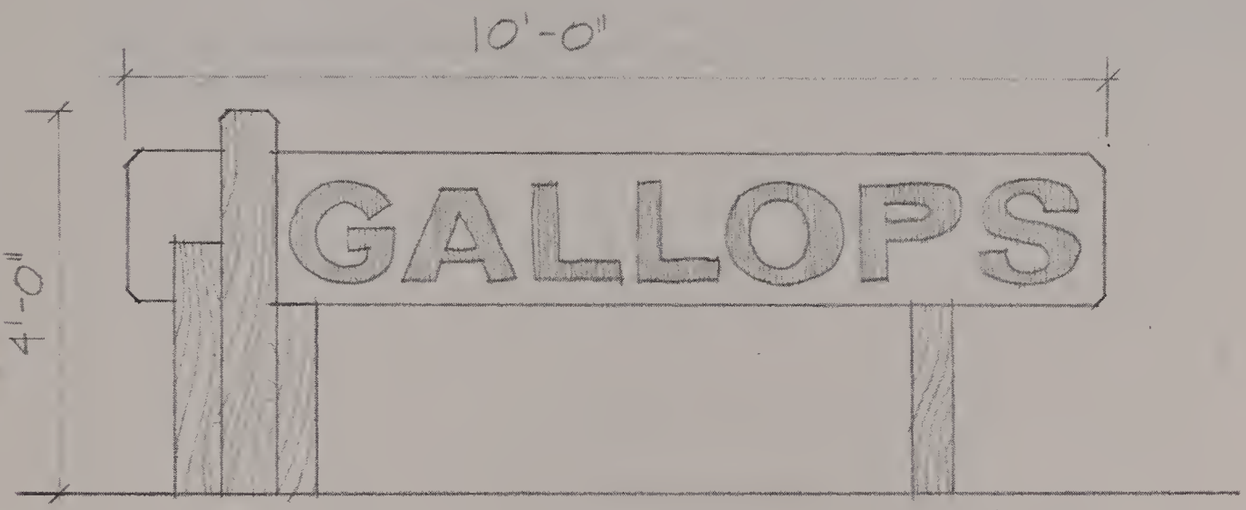
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

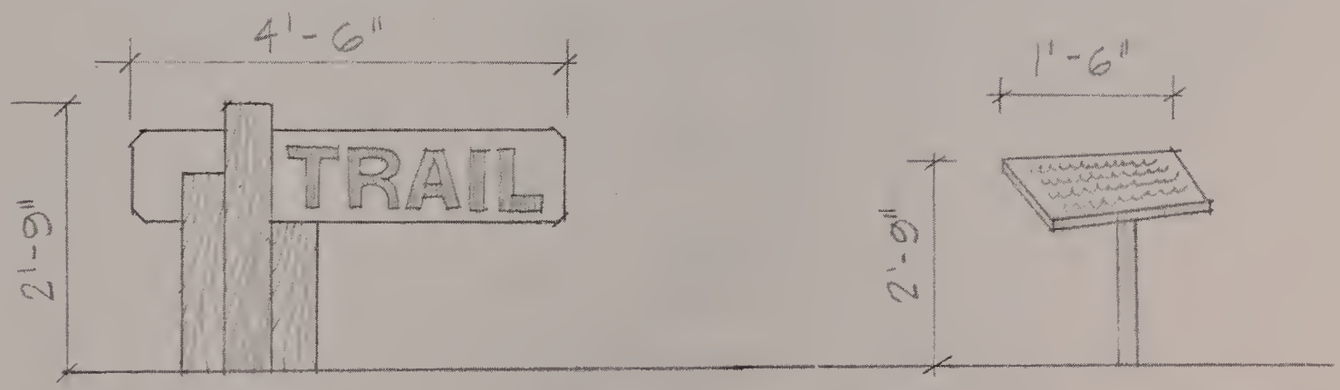
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

THE BREWSTER ISLANDS

The Islands that compose this group should be acquired, improved, and managed as a conservation area by the Department of Natural Resources. The reservation of primitive campsites, and a portion of their administration, can be managed by DNR from the ticketing facility in the ferry terminals at Boston and Nantasket. Additional administration of the campsites and Island programs can be achieved by general island DNR personnel and by MDC personnel from George's Island by an appropriate inter-agency agreement.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

GREAT BREWSTER ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		1,170SY	.35/SY	53	612			612
3. Barge Removal			3500EA	15			40,250	40,250
4. Seawall		10,950T	12/T	15		150,995		150,995
5. Pier								
18'w.	1	300LF		15	77,050			77,050
Float	2		1700EA	15	3,910			3,910
Ramp	1		1300EA	15	1,495			1,495
8. Sewer Chemical Toilet	1		5500	53	8,415			8,415
9. Constr. Shelter	1	800SF	10/SF	25		10,000		10,000
Building Demol.				25		19,575		19,575
11. Trails Unpav. 3'		3500LF	33/100LF	25	1,444			1,444
12. Planting				53	2,754			2,754
13. Fort Reno.				53		21,420		21,420
14. Equipment Trash Cont.	5		10EA	50	75			75
15. Signs								
Large	1		3,000EA	25	3,750			3,750
Small	10		200EA	25	2,500			2,500
16. Trans. to Isl.					6,750	6,750		13,500
TOTAL					108,755	208,740	40,250	357,745

NOTE: Figures may not total due to rounding.

MIDDLE BREWSTER ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub				53	612			612
3. Barge Removal	1		3,500EA	15			40,250	40,250
5. Pier								
10'w.	1	40LF		15		6,808		6,808
Float	1		1,700EA	15		1,955		1,955
Ramp			1,300EA	15		1,495		1,495
8. Chemical Toilet	1		5,500EA	53		8,415		8,415
9. Const.		800SF	10/SF	25		10,000		10,000
11. Trails Unpav. 3'		3500LF	33/100LF	25		1,444		1,444
12. Planting				53		1,148		1,148
14. Equipment				50		2,430		2,430
15. Signs Small	5		200EA	25		1,250		1,250
16. Trans. to Isl.				35		6,750		6,750
17. Miscel. Flagpole				53	1,209			1,209
TOTAL					1,821	41,695	40,250	83,766

NOTE: Figures may not total due to rounding.

OUTER BREWSTER

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		1,333SY	.33/54	53	704			704
3. Barge Remov.	1			15		40,250		40,250
5. Pier								
10'w.	1	200LF		15		34,040		34,040
Float	1		1,700EA	15		1,955		1,955
Ramp	1		1,300EA	15		1,495		1,495
8. Chemical Toilet	1		5,500EA	53		6,875		6,875
9. Building								
Demol.				25	43,750			43,750
Rehab.				50		4,600		4,600
11. Trails Unpav. 3'		4,000LF	33/100LF	25		1,650		1,650
12. Planting					1,148			1,148
13. Fort Renov.						36,720		36,720
14. Equipment								
Trash Cont.	9		10EA	50		135		135
Other				50		2,295		2,295
15. Signs								
Large	1		3,000EA	25		3,750		3,750
Small	5		200EA	25		1,250		1,250
16. Trans. to Isl.					6,750	9,450		16,200
17. Flagpole				53		1,209		1,209
TOTAL					52,352	145,674		198,026

NOTE: Figures may not total due to rounding.

CALF ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		1,500SY	.35/SY	53	803			803
3. Barge Removal	2		3,500EA	15			80,500	80,500
5. Pier 10'w.	1	1,000SF		15		17,020		17,020
Float	1		1,700EA	15		1,955		1,955
Ramp	1		1,300EA	15		1,495		1,495
8. Sewer Chemical Toilet	1		5,500EA	53		6,875		6,875
9. Building Const. Shelter	1	100LF	10/SF	25		12,500		12,500
11. Trails 3'		4,500LF	33/100LF	25		1,862		1,862
12. Planting						1,148		1,148
14. Equipment Trash Bar.	9		10EA	50	135			135
15. Signs								
Large	1		3,000EA	25	3,750			3,750
Small	5		200EA	25	1,250			1,250
16. Trans. to Isl.				35		4,725		4,725
17. Misc. Flagpole	1		790	53		1,209		1,209
TOTAL					5,938	48,789	80,500	135,227

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAYS (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Great Brewster (Maximum Daily Use - 150 Persons)			
Historic Fort Visitation	10,000	$4.00	$40,000
Picnicking	5,000	2.00	10,000
Hiking, Nature Walks, etc.	10,000	3.00	30,000
			$80,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAYS (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Middle Brewster (Maximum Daily Use - 50 Persons)			
Primitive Camping	400	$6.00	$ 2,400
Picnicking	1,000	3.00	3,000
Boating	300	6.00	1,800
Hiking, Nature Walks, etc.	1,000	3.00	3,000
			$10,200

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

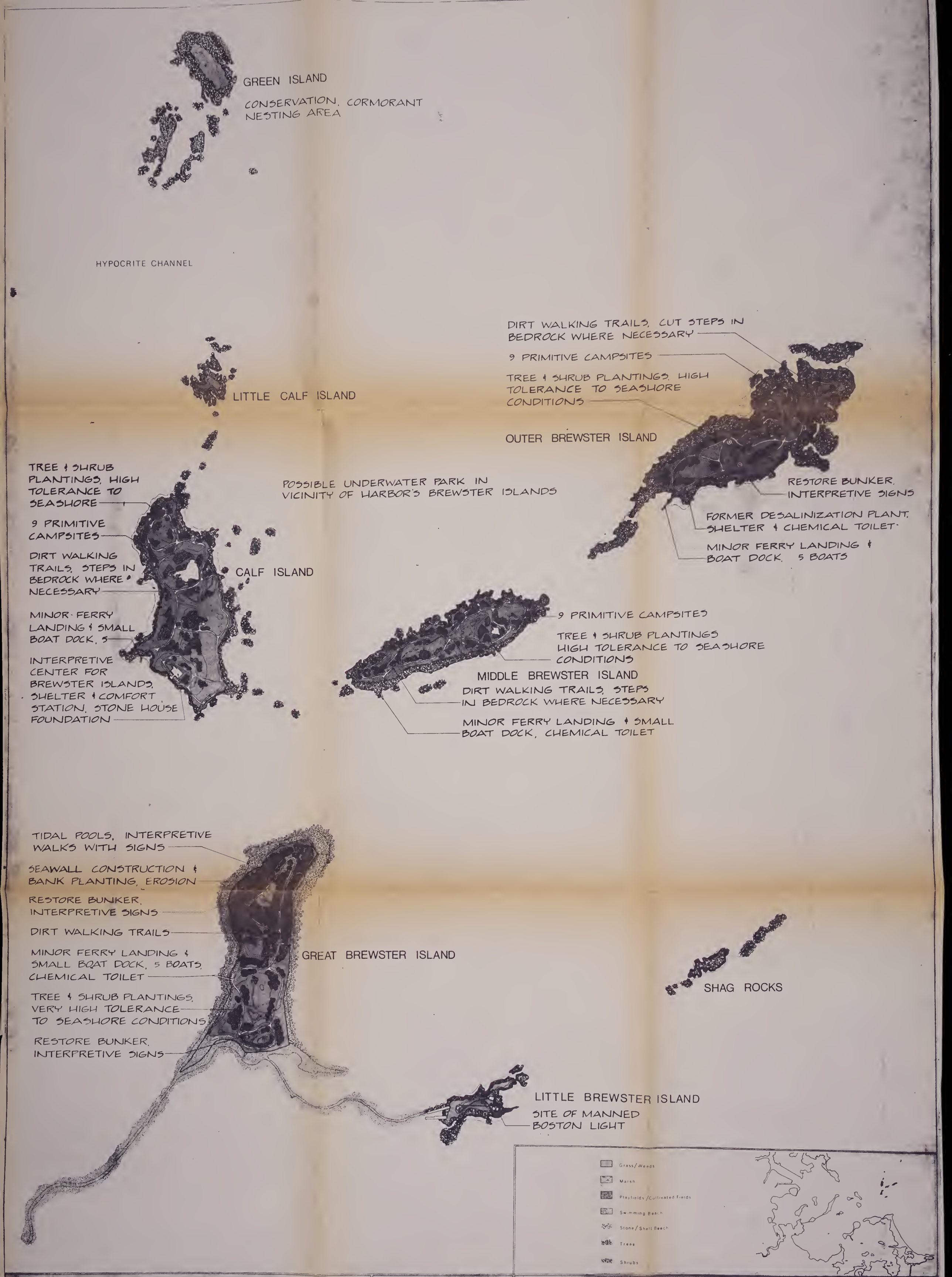
ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Calf (Maximum Daily Use - 50 Persons)			
Primitive Camping	400	$6.00	$ 2,400
Picnicking	1,000	3.00	3,000
Boating	300	6.00	1,800
Hiking, Nature Walks	1,000	3.00	3,000
			$10,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Outer Brewster (Maximum Daily Use - 50 Persons)			
Primitive Camping	400	$6.00	$ 2,400
Picnicking	1,000	3.00	3,000
Boating	300	6.00	1,800
Hiking, Nature Walks, etc.	1,000	3.00	3,000
			$10,200

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.


GREEN ISLAND
CONSERVATION, CORMORANT NESTING AREA
HYPOCRITE CHANNEL
LITTLE CALF ISLAND
DIRT WALKING TRAILS, CUT STEPS IN BEDROCK WHERE NECESSARY
9 PRIMITIVE CAMPSITES
TREE & SHRUB PLANTINGS, HIGH TOLERANCE TO SEASHORE CONDITIONS
OUTER BREWSTER ISLAND
RESTORE BUNKER, INTERPRETIVE SIGNS
FORMER DESALINIZATION PLANT, SHELTER & CHEMICAL TOILET
MINOR FERRY LANDING & BOAT DOCK, 5 BOATS
TREE & SHRUB PLANTINGS, HIGH TOLERANCE TO SEASHORE
9 PRIMITIVE CAMPSITES
DIRT WALKING TRAILS, STEPS IN BEDROCK WHERE NECESSARY
MINOR FERRY LANDING & SMALL BOAT DOCK, 5
INTERPRETIVE CENTER FOR BREWSTER ISLANDS, SHELTER & COMFORT STATION, STONE HOUSE FOUNDATION
CALF ISLAND
POSSIBLE UNDERWATER PARK IN VICINITY OF HARBOR'S BREWSTER ISLANDS
9 PRIMITIVE CAMPSITES
TREE & SHRUB PLANTINGS HIGH TOLERANCE TO SEASHORE CONDITIONS
MIDDLE BREWSTER ISLAND
DIRT WALKING TRAILS, STEPS IN BEDROCK WHERE NECESSARY
MINOR FERRY LANDING & SMALL BOAT DOCK, CHEMICAL TOILET
TIDAL POOLS, INTERPRETIVE WALKS WITH SIGNS
SEAWALL CONSTRUCTION & BANK PLANTING, EROSION
RESTORE BUNKER, INTERPRETIVE SIGNS
DIRT WALKING TRAILS
MINOR FERRY LANDING & SMALL BOAT DOCK, 5 BOATS, CHEMICAL TOILET
TREE & SHRUB PLANTINGS, VERY HIGH TOLERANCE TO SEASHORE CONDITIONS
RESTORE BUNKER, INTERPRETIVE SIGNS
GREAT BREWSTER ISLAND
SHAG ROCKS
LITTLE BREWSTER ISLAND
SITE OF MANNED BOSTON LIGHT
Grass/Weeds
Marsh
Playfields/Cultivated Fields
Swimming Beach
Stone/Shell Beach
Trees
Shrubs
THE BREWSTERS
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN
N
0 200 400
scale in feet
Little Calf: .88 Acres
Calf: 97.2 Acres
Great Brewster: 23.5 Acres
Outer Brewster: 17.6 Acres
Middle Brewster: 12 Acres
Little Brewster: 1.5 Acres
Date 9/71
Source Aerial Photographs & USGS Quads
Note: Contours for design purposes only
prepared for:
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES
by
mapc Metropolitan Area Planning Council

The Brewsters Support Documentation, 1973 March

Castle Island Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

Castle Island
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

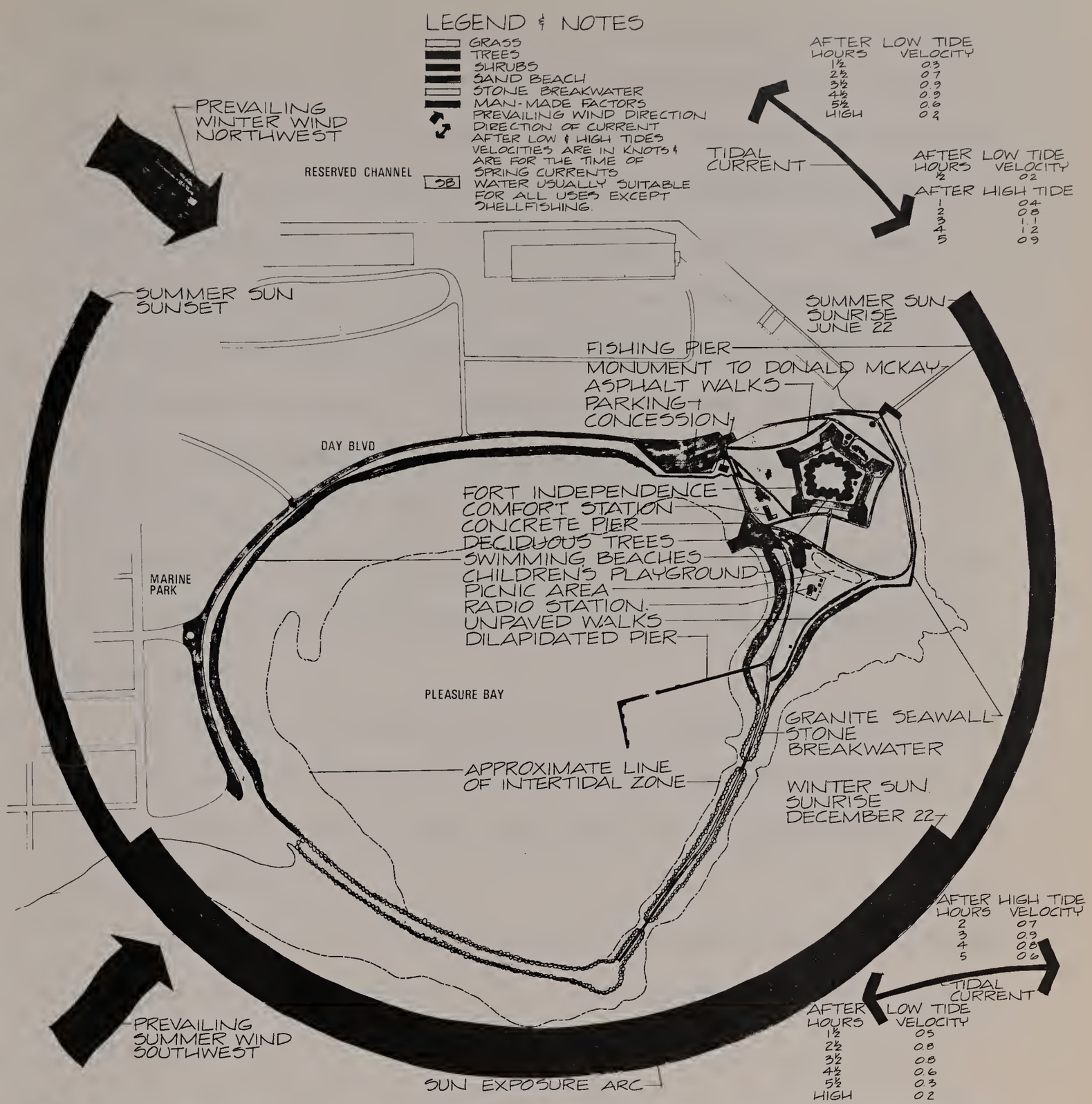
The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

CASTLE ISLAND

Description and History. Castle Island has a land area of approximately 29 acres and was attached to South Boston by fill in the 1930's. The Island is owned by the MDC and operated in conjunction with Pleasure Bay as one of the most popular recreation areas in the City. It has existing facilities for swimming, walking, viewing, and a very popular fishing pier used all year.

The granite fortress, now known as Fort Independence, is the historically rich descendant of fortifications on Castle Island which were first constructed in 1634. The original fortifications, destroyed by fire in 1674, consisted of earthworks and a wooden platform structure. A newly designed fort of brick and stone was built as a replacement and designated Castle William, in honor of King William IV. The fort fired its only shots in anger during the Revolution when the British Garrison turned its guns on Boston. It was deliberately set afire and destroyed when the British evacuated Boston in March of 1776. The Fort was renamed Fort Independence at ceremonies attended by President Adams in 1799. Built of Quincy granite, the present fortress was begun in 1801 and is still in excellent condition. Lt. Col. Sylvanius Thayer, who designed and built Fort Warren on George's Island, oversaw some of the improvements to Fort Independence during the 1830's and 1840's. At the outbreak of the Civil War, the Fort was garrisoned. By 1863 the Fort



NATURAL & MAN-MADE FACTORS

CASTLE ISLAND

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
mapc Metropolitan Area Planning Council

was connected to other installations by telegraph, and armament consisted of 107 guns. In 1890 the land surrounding the Fort was given to the City of Boston as a park. The Fort was reworked slightly as a mine control and observation station during the 1889 war with Spain. An explosion rocking the Fort, occured when powder ignited accidently, during the unloading of mines. In the First World War the Fort was used for troop training and as an observation station. A monument to the East Boston ship builder, Donald McKay, "Father of the Clipper Ship," was erected near the fort dock in 1933. The Fort was again used as an observation station during the Second World War. In October, 1962 the land and Fort were once more acquired by the Commonwealth of Massachusetts.

The Island is adjacent to the Castle Island shipping terminal, a containerized unloading facility operated by the Massachusetts Port Authority. A wire fence separates the shipping terminal from the Island.

Excellent views of the main shipping channel and the aircraft at Logan Airport across the Harbor are afforded by walks around the Fort.

CASTLE ISLAND

SLOPE

0 - 5%

5 - 12%

12% and above

GEOLOGY

Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock

BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

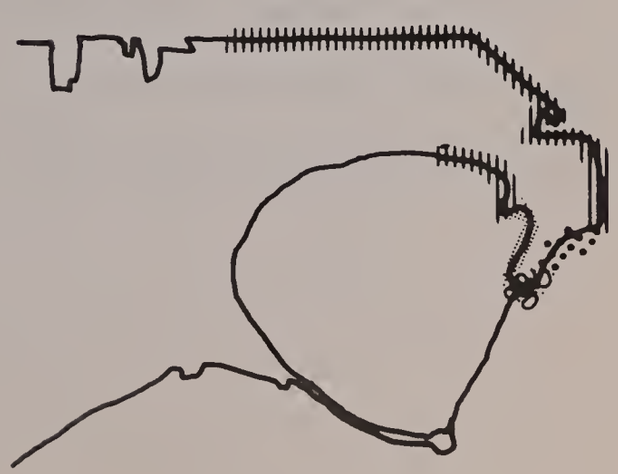
Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)



CASTLE ISLAND

Plan. The plan for Castle Island emphasizes its present role as a popular recreation area and the national and local historic significance of Fort Independence. Other important features include swimming and boating programs on Pleasure Bay and some tree planting for shade. The details of the Castle Island Plan recognize and build upon the already-established plans of the Metropolitan District Commission.

Fort Independence should be restored as completely as possible. Guided tours during the summer and interpretive markers explaining the historical importance of the Fort will be important features. Some of the rooms in the Fort can be appropriately utilized as museums and historical display areas for groups interested in the preservation and proper presentation of our military history. An audio-visual presentation of the Fort's history would be an important aspect of programs for tourists and residents.

As stated in the description, Castle Island is one of the most popular of the metropolitan parks. The Metropolitan District Commission provides facilities for fishing, picnicking, strolling, and swimming on the Island and in Pleasure Bay. General rehabilitation and landscaping of the grounds, placing powerlines underground and parkway improvements will greatly add to the enjoyment of these

facilities. Tree planting for shade and as a partial screen of the shipping terminal facility would further enhance the Fort and Island. Some landscaping of the Castle Island shipping terminal by the Massachusetts Port Authority would greatly improve that facility. Bicycle rental facilities could be provided at Castle Island to encourage the use of the continuous path system along the Harbor. The Pleasure Bay Boating Club provides a new program for beginning sailing on the protected water of Pleasure Bay.

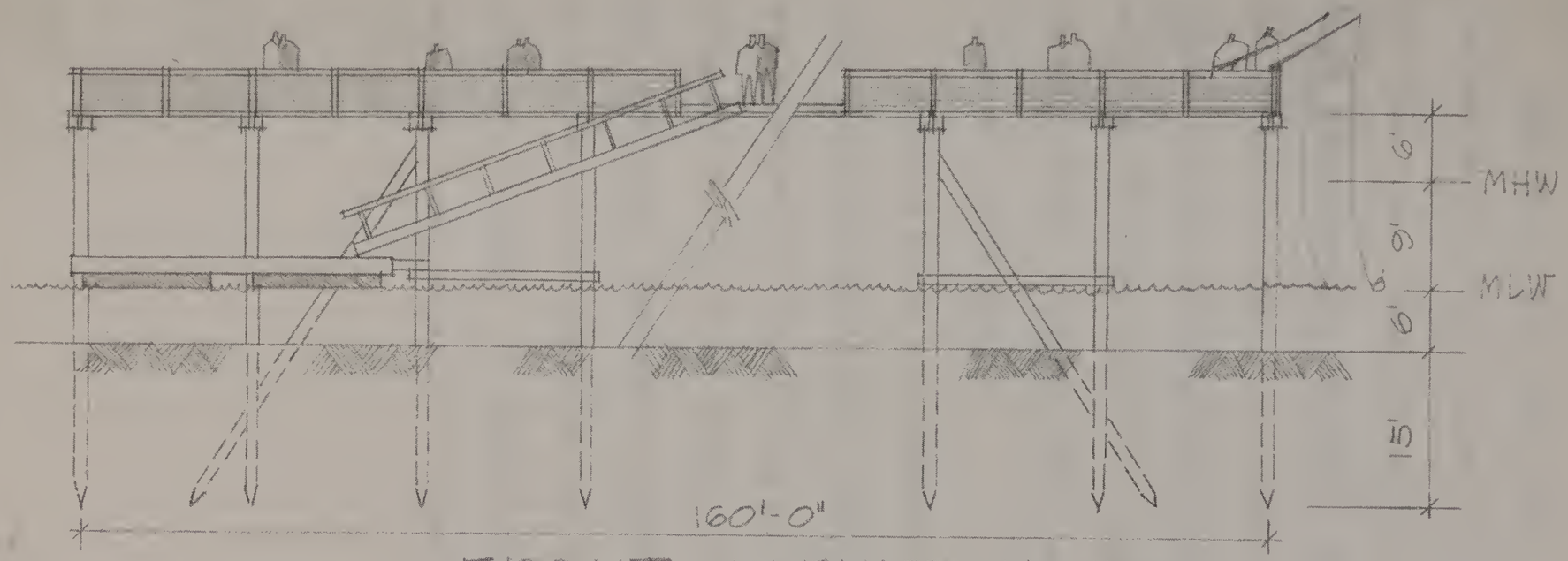
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

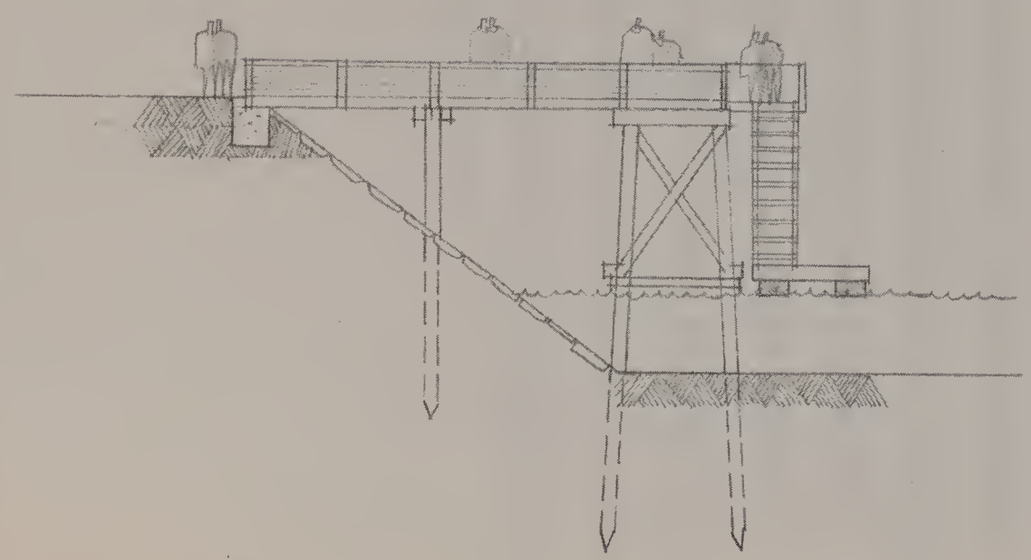
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

SEAWALLS AND REVETMENTS

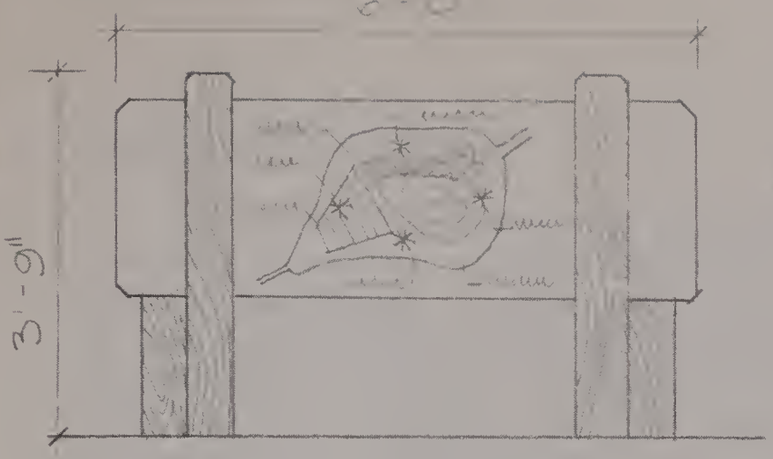
The building of seawalls and revetments has received some attention in this report as a means of retarding the natural forces of erosion. Each case of erosion on the Harbor Islands is distinct and would require further, more detailed study than that within the scope of this Plan. In several cases the very excellent cut granite seawalls, constructed in the mid 1800's are in need of repair. These repairs should be done as soon as possible or extensive damage to the Islands may occur. The plans have indicated general areas on the major Islands where erosion is severe and protection appears necessary and desirable. The selection of these areas has included considerations of the size and use of the Island and its value for the total Park System. In all cases the benefits have surpassed the costs of providing the protection. This is, of course, subject to more rigorous analysis of both the costs and benefits.

The designs of the protective seawalls should be compatible with the natural character and use of the Islands. Access to the beach areas below the seawalls should be provided and the top of the wall or rip-rap berm should accommodate walking trails and not block views.

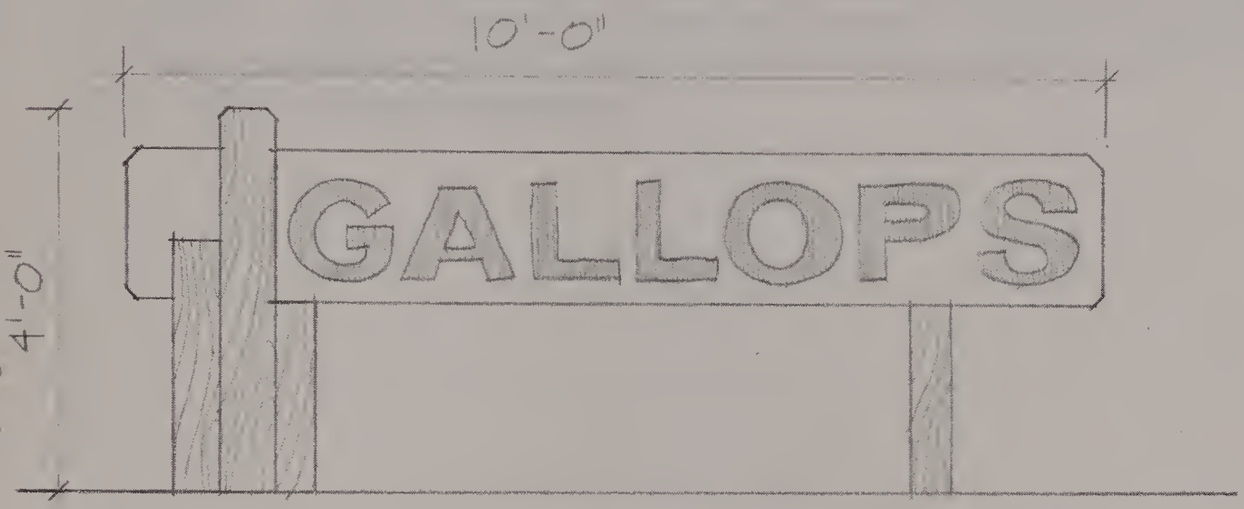
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

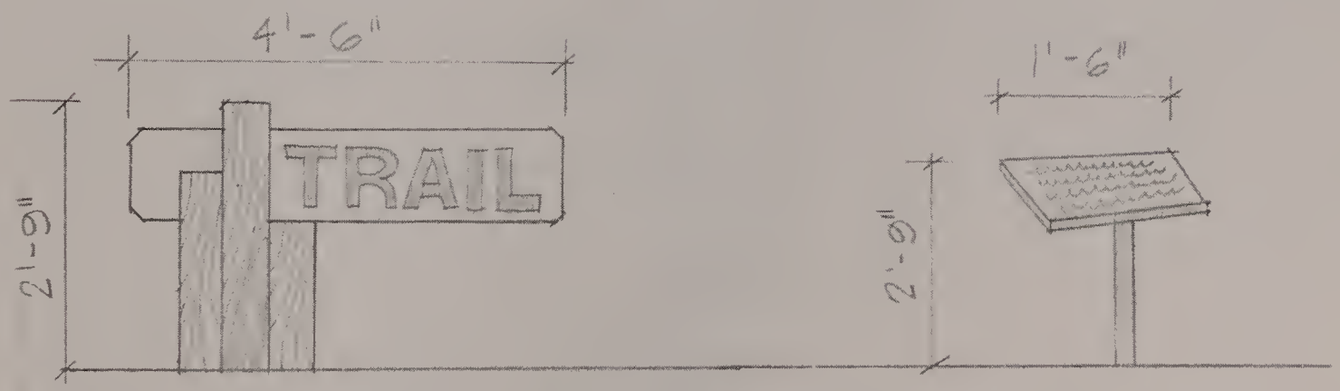
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

Fortification Renovation.

The renovation and restoration of the various historic forts in Boston Harbor presented a special cost estimation problem. While these structures represent a major man-made resource, they show the damage of years of neglect. Costs for their renovation were based on several assumptions. It was assumed that full restoration or renovation would be reserved for the most significant of the forts while limited steps would be taken at the majority of the sites. Limited renovation would include only such measures as would be necessary to render the forts safe and arrest the forces of decay. Additional more detailed cost estimates would be prepared during the implementation of the comprehensive plan for each island fort. On the basis of these assumptions two levels of cost were estimated. The first cost is for limited renovation, necessary to render the forts safe. This cost was based on published unit cost data and rough estimates of the number of units needing renovation at each fort. The second cost is for full renovation and was based on MDC experience on George's Island.

CASTLE ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
12. Planting								
Decid.	180		40/EA	53	11,016			11,016
Evergr.	60		30/EA	53	2,754			2,754
Shrubs	150		10/EA	53	2,295			2,295
13. Fort Renova.				53	460,377	1,133,026	1,163,350	2,756,753
14. Equipment								
Benches	30		200/EA	50	9,000			9,000
Trash Cont.	10		10/EA	50	150			150
15. Signs								
Large	1		3,000/EA	25	3,750			3,750
Small	20		200/EA	25	5,000			5,000
TOTAL					494,342	1,133,026	1,163,350	2,790,718

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Castle (Maximum Daily Use - 2,000 Persons)			
Historic Fort Visitation	100,000	$5.00	$500,000
Swimming	70,000	2.00	140,000
Fishing	10,000	2.00	20,000
Picnicking	4,000	2.00	8,000
Boating	3,000	3.00	9,000
Hiking, Nature Walks	10,000	2.00	20,000
			$697,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

RESERVED CHANNEL

DAY BLVD

PARKING LOT. 250 CARS

FORT INDEPENDENCE
RENOVATION, HISTORIC
MUSEUM & ACTIVITIES

COMFORT STATION

PAVED WALKS

TREE PLANTING

MARINE
PARK

PLEASURE BAY

Grass/Weeds

Marsh

Playfields/Cultivated Fields

Swimming Beach

Stone/Shell Beach

Trees

Shrubs

CASTLE ISLAND
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400

Scale in Feet

Castle 292 Acres

Date March 1972

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
mapc Metropolitan Area Planning Council

Castle Island Support Documentation, 1973 March

Spectacle Island Support Documentation, 1973 March

SPECTACLE ISLAND

Plan. The plan for Spectacle Island recognizes the problems presented by more than 100 years of abuse of the Island's natural environment. It emphasizes a long term program of Island reclamation and the excellent potential of the Island as a base for a large 500 boat moorage area. Other important features include a picnic area, informal playfields, and a potential swimming beach at the southern end of the Island.

Several means of reclaiming the dump area were investigated. While a project of this nature requires a more detailed engineering study, the most practical solution appears to be periodic compaction of the dump surface after several days of pumping water into the area to control underground burning. Such a procedure may have to be repeated several times. The plan proposes a system of trails bordering the Island with boardwalks to allow passage across the dump. The trail system permits use of the area for observation of the nesting gulls and facilitate viewing of the various steps of the reclamation process. Plant cover would be important, both for wildlife and to aid in the decomposition of the compacted rubbish. Interpretive signs are proposed to explain the reclamation process and the life cycle of the nesting gulls. The final use of this area depends largely on the success of the reclamation project. Eventually with the addition of topsoil, trees might become established and the signs of the Island's 100 years of abuse would become only memories.

The steeply-eroded banks of the dump area, especially on the eastern side of the Island, present another problem. As erosion occurs, layers of rubbish are exposed and either left on the beach or washed away with the outgoing tide to litter some other beach. The plan proposes the construction of a rip-rap wall to retain this material and an extensive planting program to control erosion.

The area west of Spectacle Island offers a protected mooring area in excess of 300 acres of water surface. The water averages between 10 and 15 feet deep, an excellent depth for small boat moorages. Currents are moderate and the mooring area has two easy entrances, one from the north and the other from the south. The area is protected from northeast storm winds and is relatively close to downtown Boston and fishing areas in the Harbor. Vandalism at this moorage area would be a minor problem compared to the mainland marinas.

The plan provides mooring space for at least 500 small boats and an Island marina with dock space for 100 boats. At least 50 of these slips could be reserved for transients. Easy access to downtown Boston, other shore points and Islands is provided by the Dorchester Bay Loop, the future "neighborhood loop" and by special motor launches. Additional programs could include row-boat, sailboat, and fishing skiff rentals and bait sales. In addition to the dock space, island facilities include locker space, storage space for moorings, winter storage space for rentals and

approximately 100 small boats, a Harbor master's office, and repair space. No shore-dependent utilities or facilities for gas or diesel sales are proposed in the plan. Instead, electricity is provided by a generator and water would be supplied by a roof-top reservoir filled by one of the Harbor's water boats. One comfort station/bathhouse is provided. Food and bait sales could be provided from a boat docked at the marina. Eventually, other utilities may be desirable, but the success of the marina facility can be established before such expensive facilities are provided. Boating and yachting clubs may be interested in developing joint programs with the marina and rental facilities.

Clean-up, a planting program, trails, an informal picnic area on the southern drumlin, informal playfields on the flat area in the center of the island, and a swimming beach at the southern end are other major provisions of the plan. Water quality is a major consideration of the swimming beach. The amount and effect of leaching into the Harbor from the old garbage dump is unknown. The area at the southern end of the Island is suitable for a swimming/sunbathing beach but is, or course, dependent upon improved water quality.

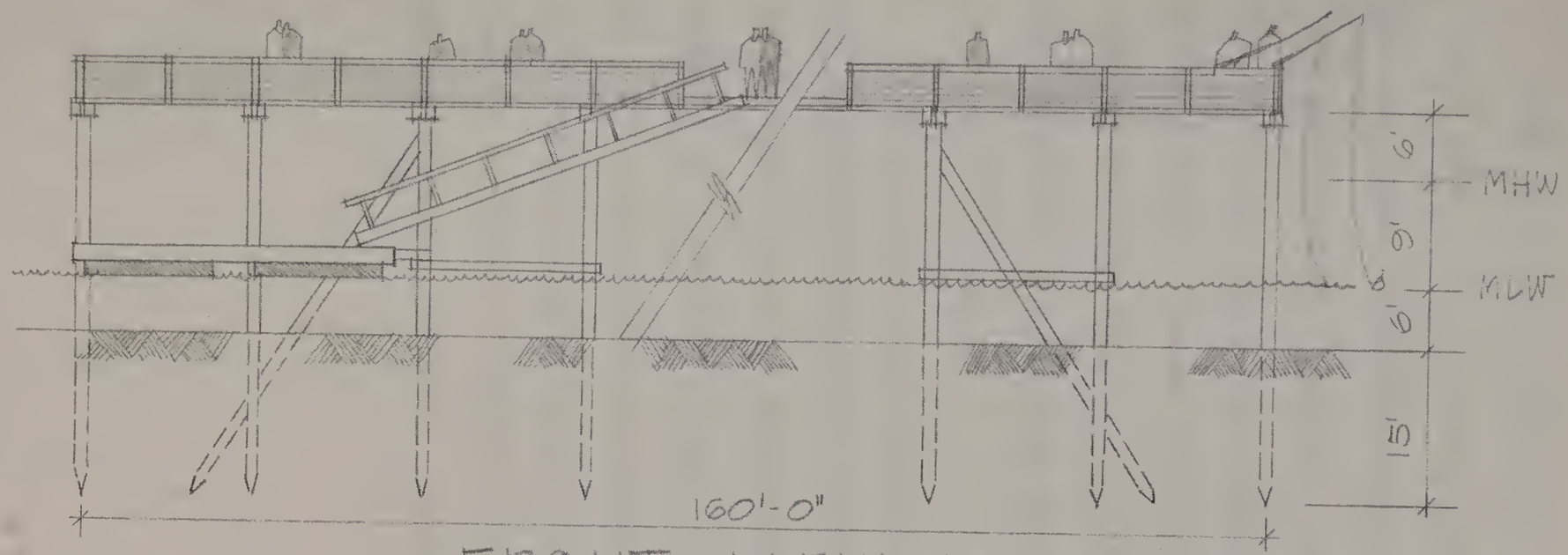
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

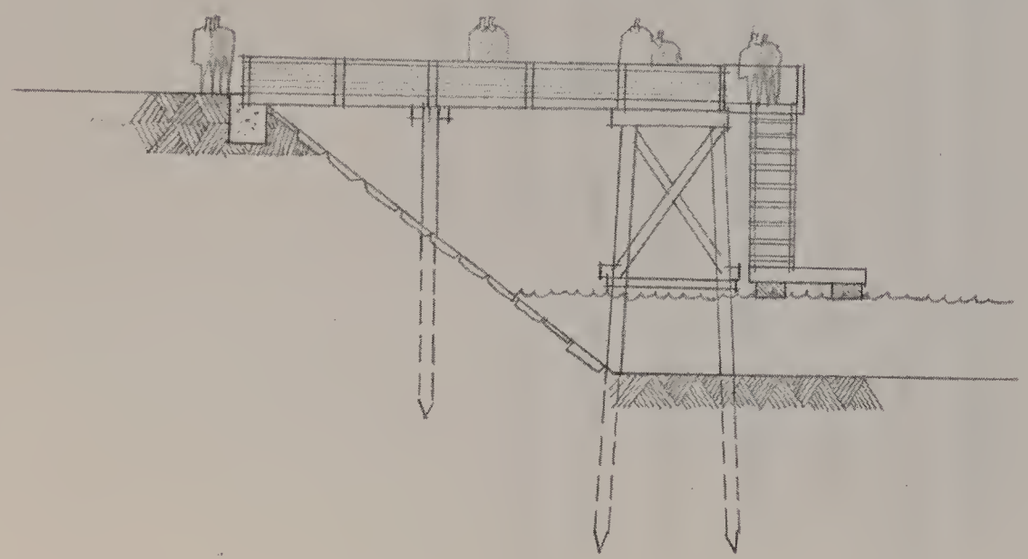
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

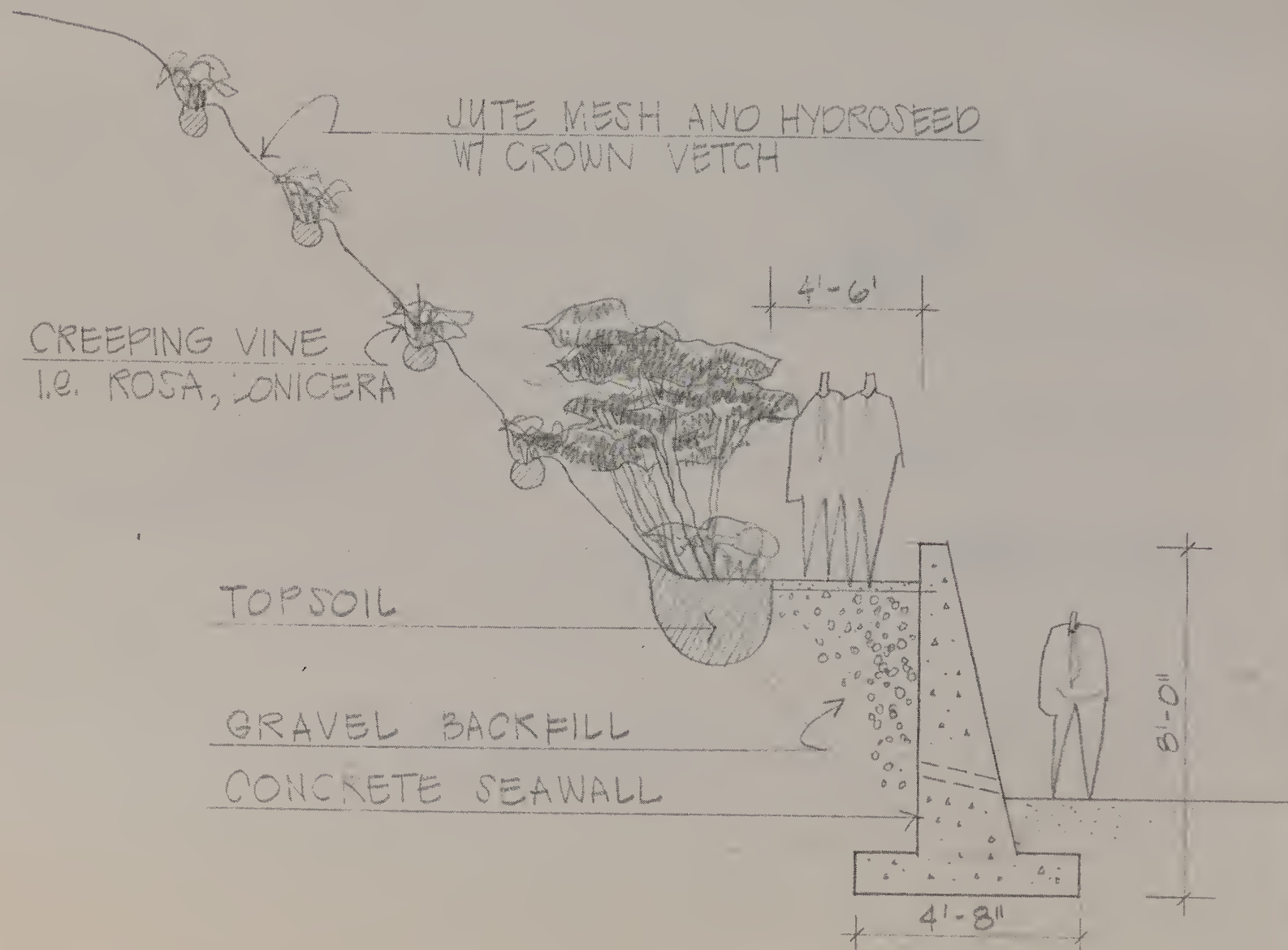
Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

SEAWALLS AND REVETMENTS

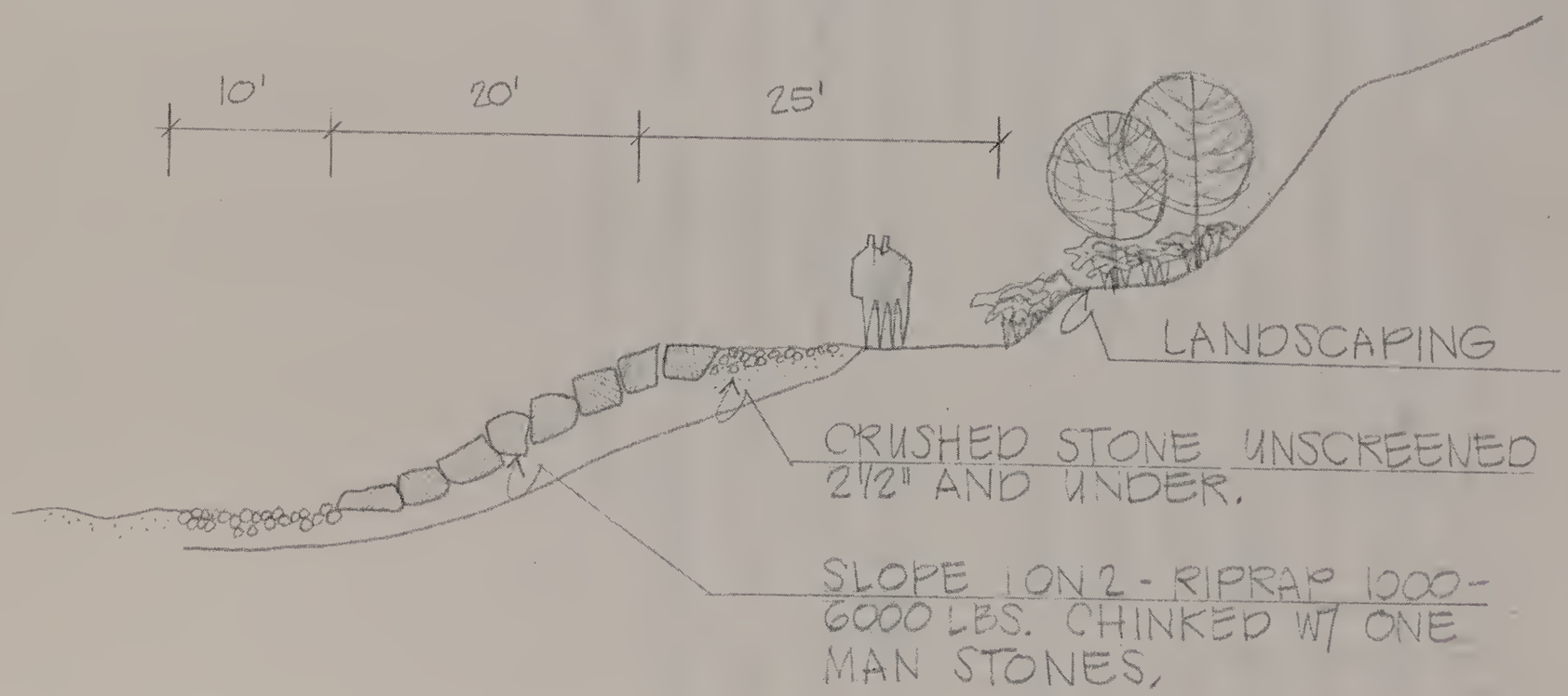
The building of seawalls and revetments has received some attention in this report as a means of retarding the natural forces of erosion. Each case of erosion on the Harbor Islands is distinct and would require further, more detailed study than that within the scope of this Plan. In several cases the very excellent cut granite seawalls, constructed in the mid 1800's are in need of repair. These repairs should be done as soon as possible or extensive damage to the Islands may occur. The plans have indicated general areas on the major Islands where erosion is severe and protection appears necessary and desirable. The selection of these areas has included considerations of the size and use of the Island and its value for the total Park System. In all cases the benefits have surpassed the costs of providing the protection. This is, of course, subject to more rigorous analysis of both the costs and benefits.

The designs of the protective seawalls should be compatible with the natural character and use of the Islands. Access to the beach areas below the seawalls should be provided and the top of the wall or rip-rap berm should accommodate walking trails and not block views.

RETAINING STRUCTURE and EROSION CONTROL
BOSTON HARBOR ISLANDS



RETAINING STRUCTURE - RIPRAP WALL
BOSTON HARBOR ISLANDS

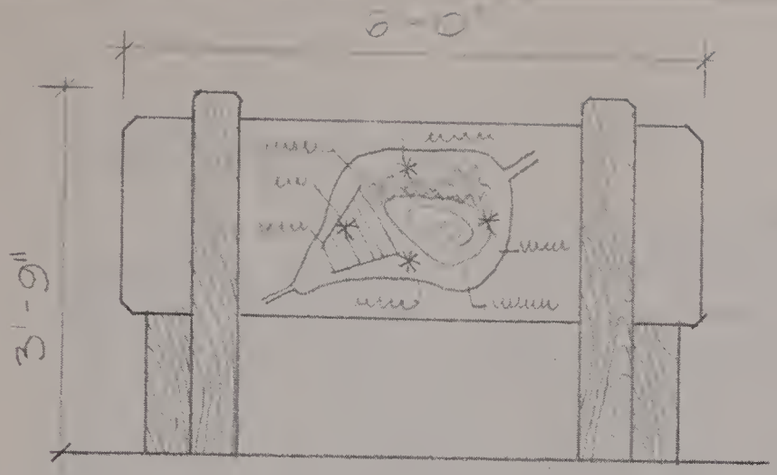


RIP-RAP SECTION
NO SCALE

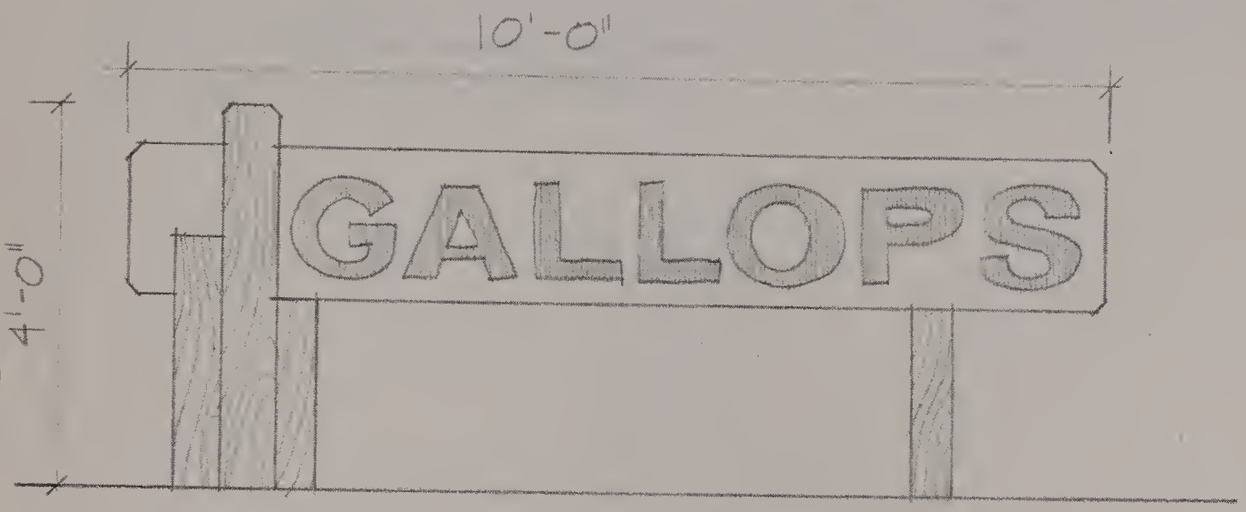
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

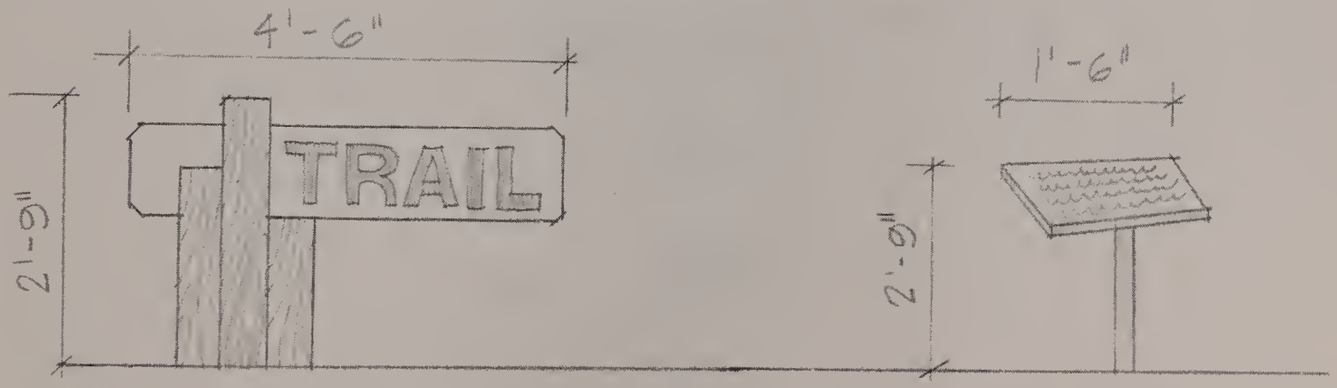
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2" = 1'-0"



ISLAND SIGN 1/2" = 1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

SPECTACLE ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		19,350SY	.35/SY	53	10,404			10,404
2. Dredging				25			76,250	76,250
3. Barge Removal	1		2,000	15	2,300			2,300
4. Seawall				15			94,530	94,530
5. Pier & Board.				15			379,684	379,684
8. Chemical Toilet	1		5500EA	53			8,415	8,415
9. Building Demol.				25	44,000			44,000
Constr. Locker	1	1,200SF	10/SF	25	15,000			15,000
10. Grading & Seeding				53		178,159		178,159
11. Trails Unpav. 6'		7,700LF	167/100LF	25		1,931	4,506	6,437

SPECTACLE ISLAND (Continued)

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
12. Planting	400		40EA	53		12,240	12,240	24,480
Evergreen	200		30EA	53		9,180	9,180	18,360
Shrubs	300		10EA	53		2,295	2,295	4,590
14. Equipment								
Picnic Table	25		100EA	50		3,750		3,750
Benches	20		200EA	50		6,000		6,000
Trash Cont.	10		10EA	50		150		150
Fire-place	25		120EA	50		4,500		4,500
15. Signs								
Large	1		300EA	25		3,750		3,750
Small	13		200EA	25		3,250		3,250
16. Trans. to Isl.				35	4,725	4,725	4,725	14,175
17. Pump for Extingu-ishing Fire					51,844			51,844
TOTAL					128,273	229,930	591,825	950,028

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

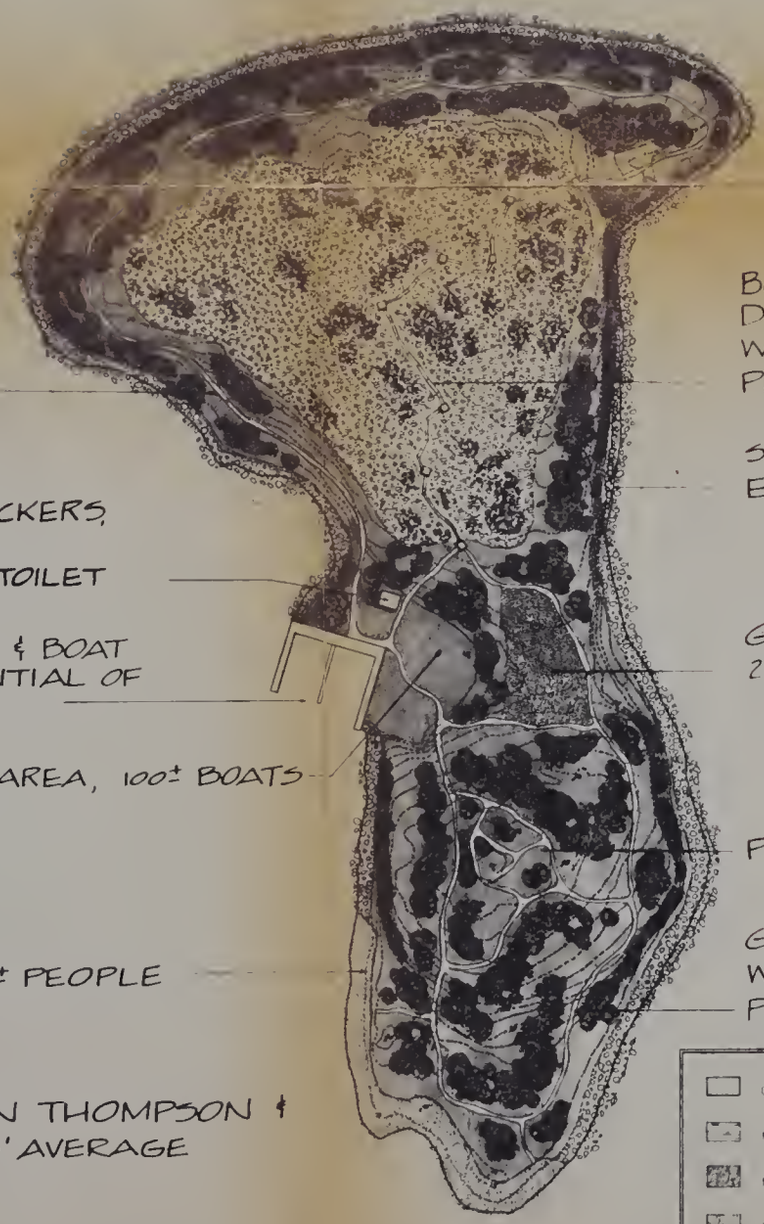
---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* ESTIMATE	ANNUAL VALUE (ESTIMATE)
Spectacle (Maximum Daily Use - 400 Persons)			
Picnicking	5,000	$2.00	$ 10,000
Play	5,000	2.00	10,000
Swimming	5,000	3.00	15,000
Boating	40,000	6.00	240,000
Hiking, Nature Walks etc.	10,000	2.00	20,000
			$295,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.



GRAVEL WALKING TRAILS & TREE PLANTING ON NORTH NATURAL PORTION OF ISLAND

INTERPRETIVE CENTER, LOCKERS, HARBOR MASTER OFFICE, BATHHOUSE & CHEMICAL TOILET

MAJOR FERRY TERMINAL & BOAT DOCK, 100± BOATS, POTENTIAL OF BOAT RENTAL

WINTER BOAT STORAGE AREA, 100± BOATS

SWIMMING BEACH, 100± PEOPLE

BOAT MOORAGE BETWEEN THOMPSON & SPECTACLE ISLANDS, 15' AVERAGE DEPTH, 300± ACRES

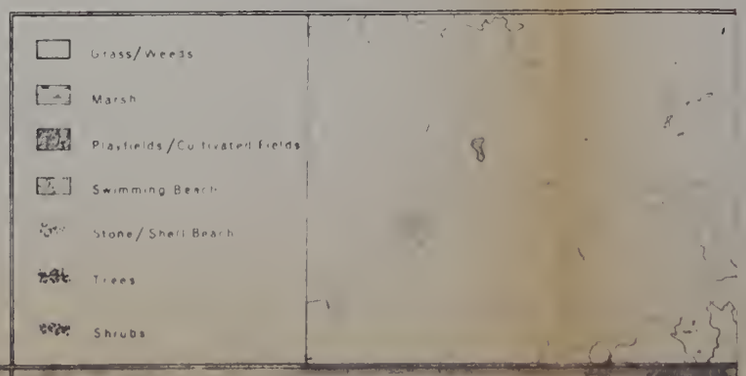
BOARDWALK OVER SOLID DUMP RECLAMATION AREA WITH INTERPRETIVE SIGNS, PLANT COVER ENCOURAGED

SEAWALL & PLANTING FOR EROSION CONTROL

GRASS AREA FOR PLAYFIELDS, 2± ACRES

PICNIC AREA, 25± TABLES

GRUB & CLEAR FOR GRAVEL WALKING TRAILS, TREE PLANTING AS INDICATED



SPECTACLE ISLAND
PLAN PROPOSAL
WINTHROP COMMUNITY COMPREHENSIVE PLAN

N

0 200 400

prepared for:

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by

MAPC Metropolitan Area Planning Council

Spectacle Island Support Documentation, 1973 March

Thompson Island Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

Thompson Island
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

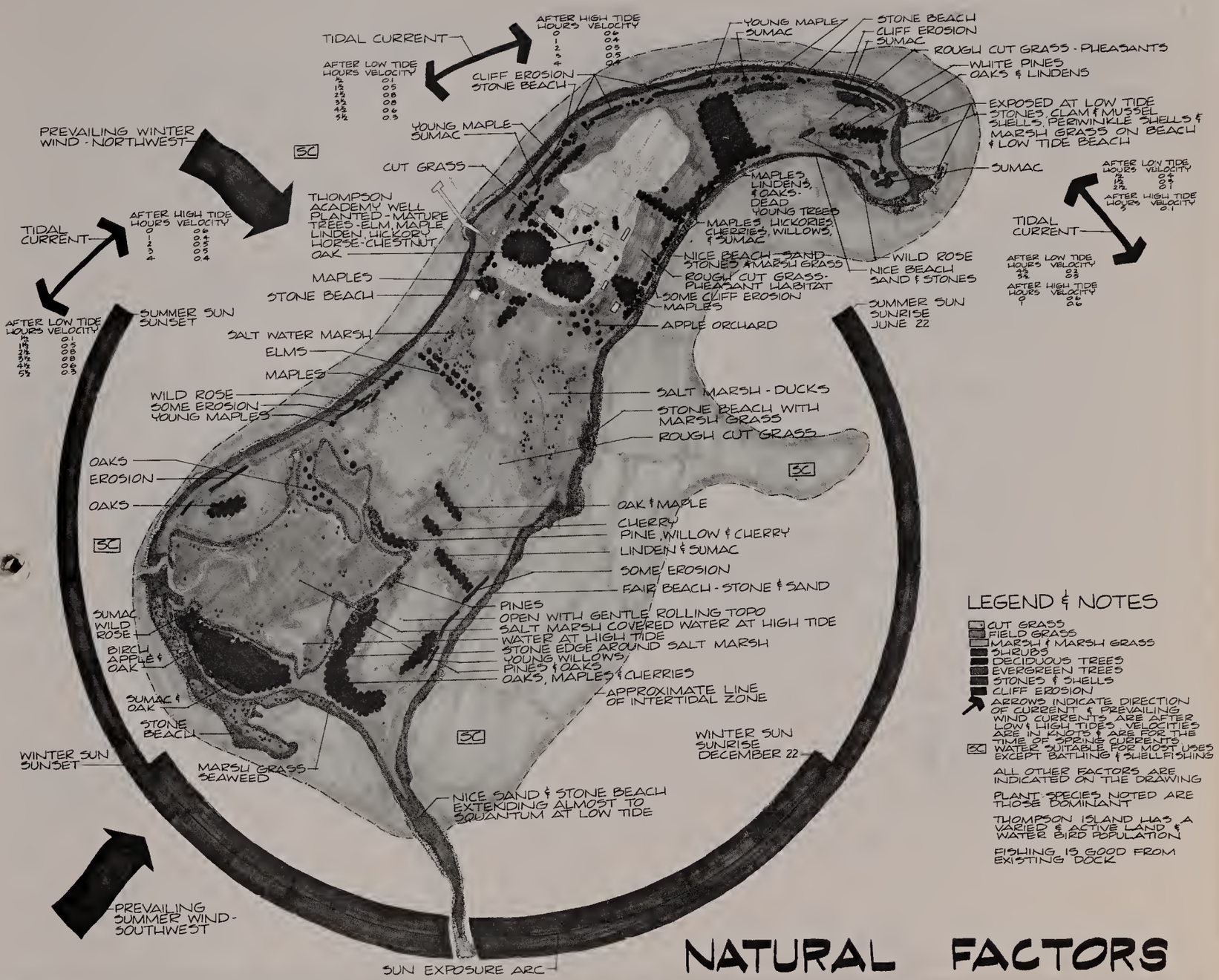
THOMPSON ISLAND

Description and History. Thompson Island is a large, 157 acre island lying in Dorchester Bay very close to Squaw Rock in Squantum. It was first settled by David Thompson, who established a trading post with the Neponset Indians in 1626. The Island was acquired by the community of Dorchester in 1634 and leased to several families for farming.

In 1833, the Boston Asylum for Indigent Boys moved to the Island. Two years later, the Asylum merged with the Boston Farm School Society. The name of the institution was changed to the Boston Farm and Trade School. Its purpose was to provide a home and school environment for worthy boys who for one reason or another did not have an adequate home life.

By the late 1800's the school had established an excellent farm, with a herd of cows, pigs, horses, turkeys, hens, and some beef cattle. Much of the marsh land was drained and dyked for pasture.

Vocational training and farming continued until the middle of the 20th century when the increasing emphasis on a college education led to a change in the school's curriculum and the unfavorable economics of the farm led to its discontinuence. The farm and herd of cows were phased out and a more traditional academic curriculum was instituted. In 1955, the school was renamed Thompson Academy, to more accurately reflect the shift



NATURAL FACTORS

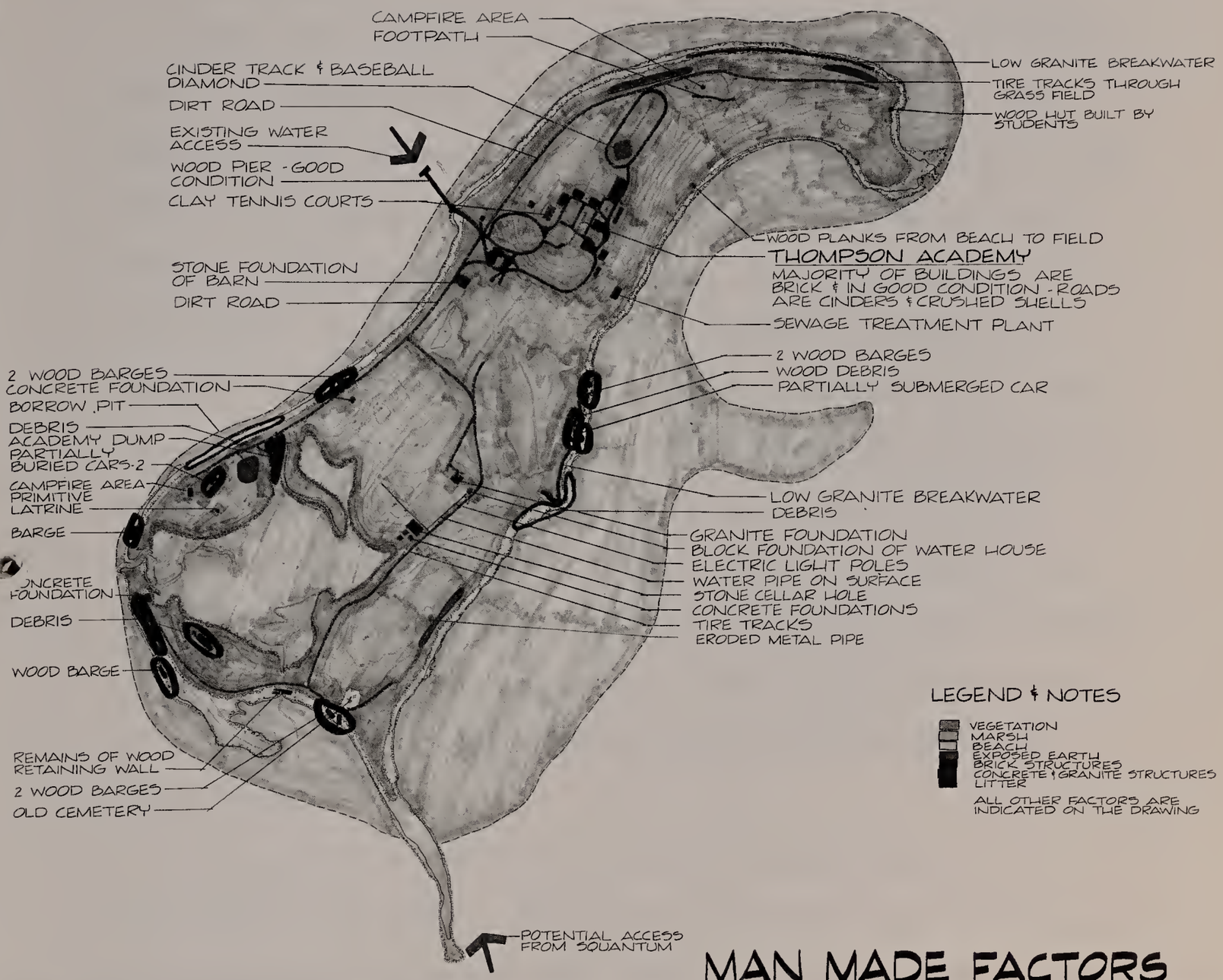
THOMPSON ISLAND

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
mapc Metropolitan Area Planning Council



MAN MADE FACTORS

THOMPSON ISLAND

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
mapc Metropolitan Area Planning Council

in educational emphasis which had occurred. The school enrollment has been about 100 boys, for many years, many of whom now go on to college.

Most of the existing buildings were constructed in the early 1900's. A gymnasium and dormitory are among the newest. The athletic fields and buildings are located on rolling upland in the middle of the Island. The southern half of the Island is mostly lowland, a considerable portion of which is an excellent salt-water marsh. The tidal ponds and salt marsh are teaming with interesting wildlife. Baby fish and clams, migratory water fowl, and a great variety of song birds feed in the marsh, which is extremely rich in nutrients. Open fields from the abondoned farm and several good stands of hard and soft wood trees as well as an old apple orchard make this Island one of the most attractive in the Harbor. This variety in environmental types make Thompson Island one of the richest and most beautiful resources in the metropolitan area.

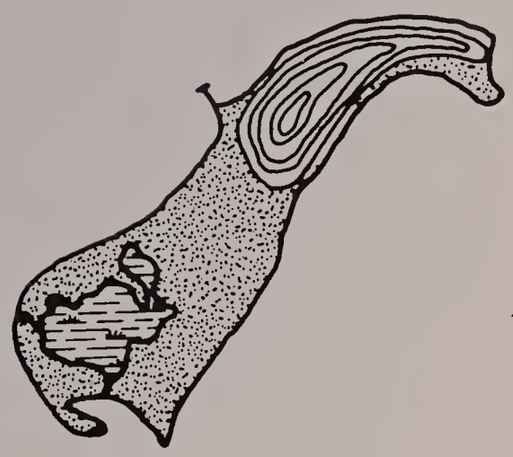
A network of grown-over dirt roads extends from one end of the Island to the other. Several old barges have been washed up along the shore and an old dump exists on the edge of the salt-marsh, but generally Thompson Island is well cared for and unlittered. The Academy's pier is located on the northwest side of the Island and the Academy's boat, the Pilgrim IV, makes several scheduled trips daily to Kelley's Landing in South Boston.

THOMPSON ISLAND

SLOPE

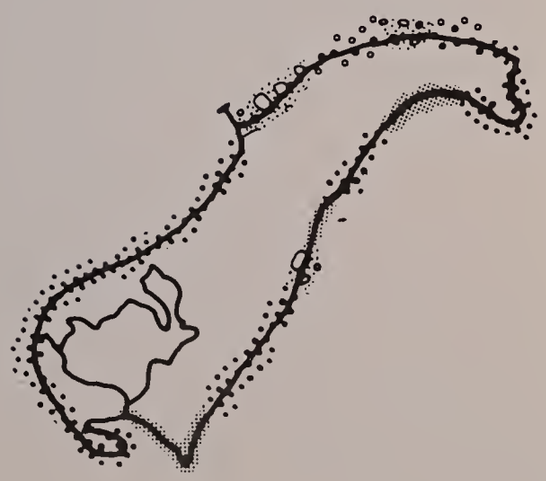
- 0 - 5%
- 5 - 12%
- 12% and above

GEOLOGY



- Beach, Sand, Gravel
- Silt, Muck, Peat
- Man-made
- Drumlin
- Bedrock

BEACH AREAS



- Mostly Sand (fine sand)
- Coarse Sand (coarse grade sand, pebbles, shells)
- Mixed (coarse sand, pebbles, shells, small rocks)
- Rocky (small rocks to 8 inches in diameter)
- Seawall/Rip-rap (broken/intact seawall/rip-rap)
- Steep-eroded Banks (areas of major erosion)
- Bedrock (outcropping)

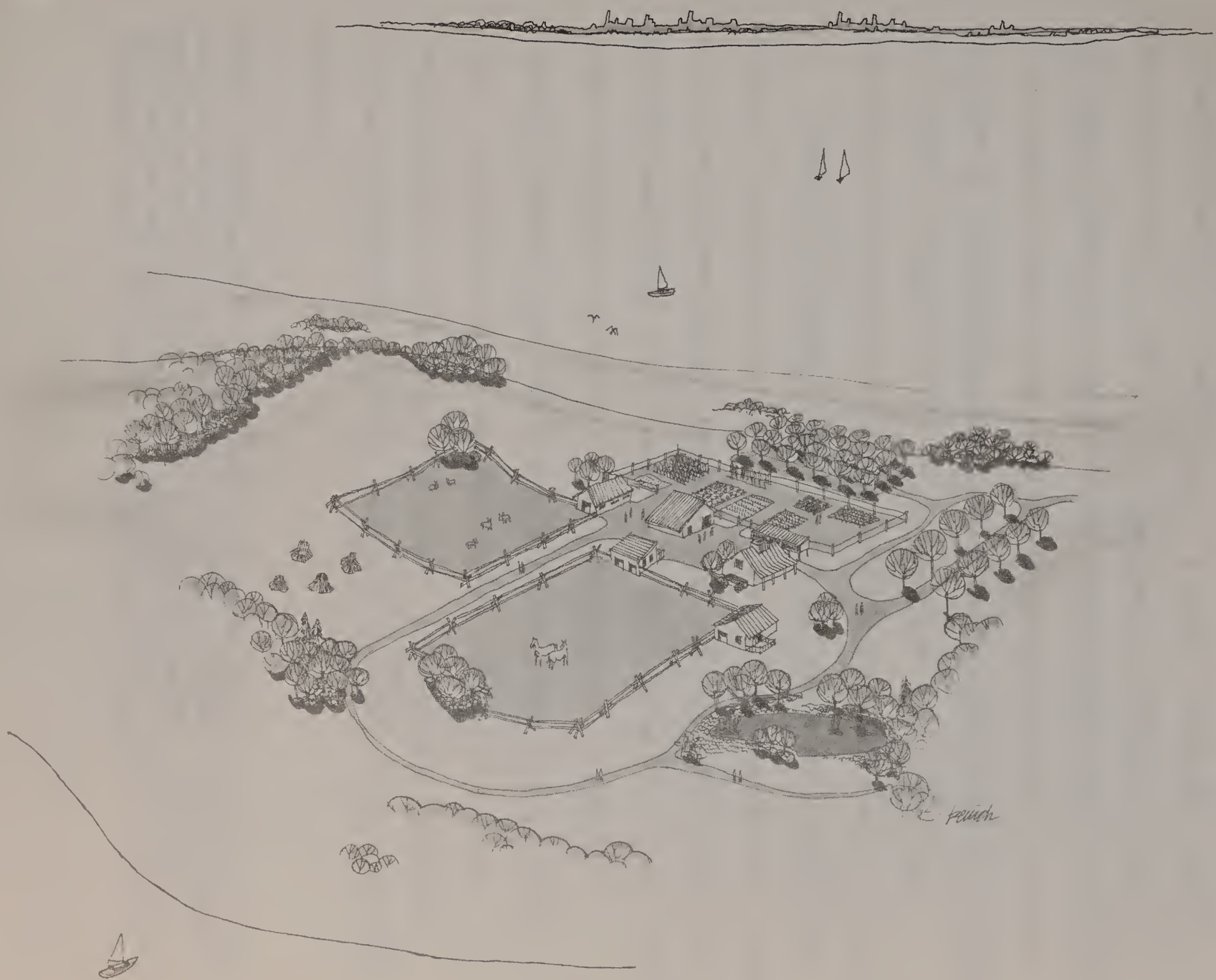
Except for a fine beach on the northeastern end of the Island, most of the shoreline is coarse sand and gravel. The northwestern side is mostly rocky. A long sand bar extends to the south and nearly connects the Island with Squaw Rock at low tide. A small boat channel is maintained between the mainland and Thompson Island.

THOMPSON ISLAND

Plan. The plan for Thompson Island emphasizes the natural beauty and history of the Island. Important features include an Island Model Farm, a salt marsh wildlife sanctuary, a swimming beach, and a broadening of the concept of use of the Island as an important educational facility.

The Model Farm is designed to be representative of farming activities which occurred historically on most of the islands of Boston Harbor. The Farm includes area for rabbits, chickens, turkeys, cows, ducks, geese, pigs, horses, sheep and goats; as well as a small vegetable garden and an area for field crops. Covering an area of approximately 30 acres, it is intended as an educational facility for city children similar in operation to the Audubon Society's Drumlin Farm in Lincoln, Massachusetts. During the week the Model Farm would provide guided tours for groups and classes of school children. Such a program could supplement classroom history and agricultural studies. Special programs associated with farm activities such as a harvest festival could be conducted during the weekends. The farm is designed to be capable of handling 100,000 visitors annually without adversely effecting the natural beauty of the Island. A Farm Interpretive Center* and picnic area with

*NOTE: It is recommended that the stone foundation from the recently burned barn be reused for the foundation of this interpretive center.



MODEL FARM

50 tables are located near the pier; guided tours would begin here; and visitors would receive a map of the Island and farm including descriptive information. A small charge for guided tours should cover part of the approximately $100,000 annual operating costs of the farm,* while participating school districts could support most of the expense. Construction costs could be provided by the Massachusetts Department of Agriculture or the DNR. An operating subsidy should not be necessary as several such facilities have been established recently as profit-making facilities.

A major salt marsh wildlife sanctuary takes advantage of the nearly 50 acres of salt marsh. The sanctuary is separated by fields, a hill and by new screen plantings from the farm. The trails and floating boardwalks are intended as a self-guided nature tour with signs explaining the ecology of the salt marsh. A system of viewing platforms and towers is provided so that birds, marine life, and plant materials may be observed while the natural environment of the marsh is protected. An extensive planting program is designed to provide food and cover for birds and other wildlife.

---

*NOTE: Information on the design and operation of the Model Farm was obtained by interview from the Administrator of Massachusetts Audubon's Drumlin Farm in Lincoln, Massachusetts. Additional information was obtained from Kalamazoo Nature Center, Kalamazoo, Michigan and the Rockford, Illinois Park District.

WILDLIFE SANCTUARY

A swimming beach large enough for 300 swimmers is located on the northeast shore of the Island. Two picnic areas one with 20 tables and another with 30 tables are widely spaced among the trees above the swimming beach. A comfort station and bathhouse serve the swimming areas.

Thompson Academy has initiated several new programs to more fully utilize its facilities and relate more directly to other institutions in the Boston area. Currently the University of Massachusetts and the Academy are co-sponsoring programs on the Island. For the last two years the Island has been available to groups interested in summer use of the Island. Notable among these have been Boston area blind children and a New England Aquarium - Boston University Joint Study Group. Additional programs are being planned and should be encouraged as long as they are consistent with the educational and conservation uses of the Island.

The Massachusetts Department of Natural Resources will study the ownership alternatives posed by this Plan for Thomspon Island in detail. The trustees of the Academy have stated their desire to retain ownership of the Island. At the same time the General Court has specifically named Thompson Island as one of the privately owned Islands to be acquired in "fee or any lesser interest" This plan recommends that less than a fee interest, either an easement or very long term lease, would be sufficient to implement the proposed plan and fulfill the purposes set forth in the Harbor Islands Legislation.

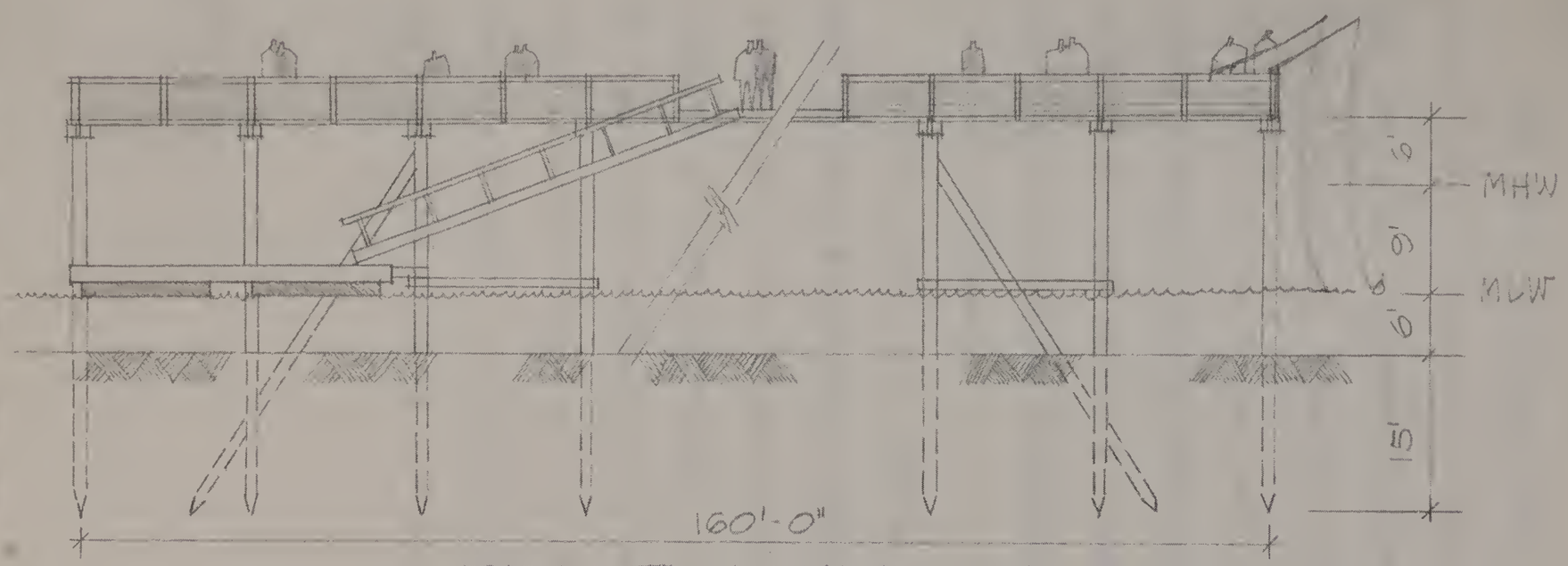
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

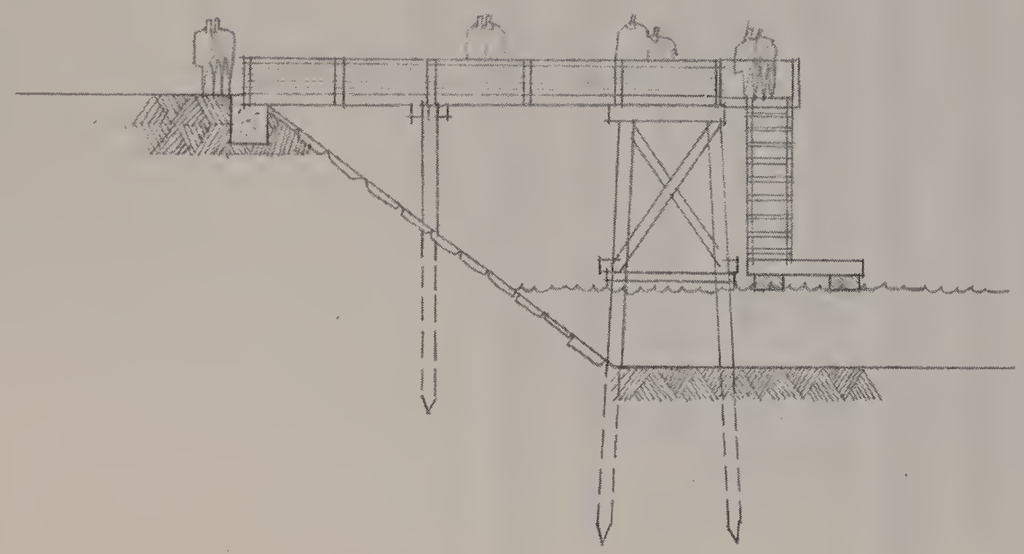
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

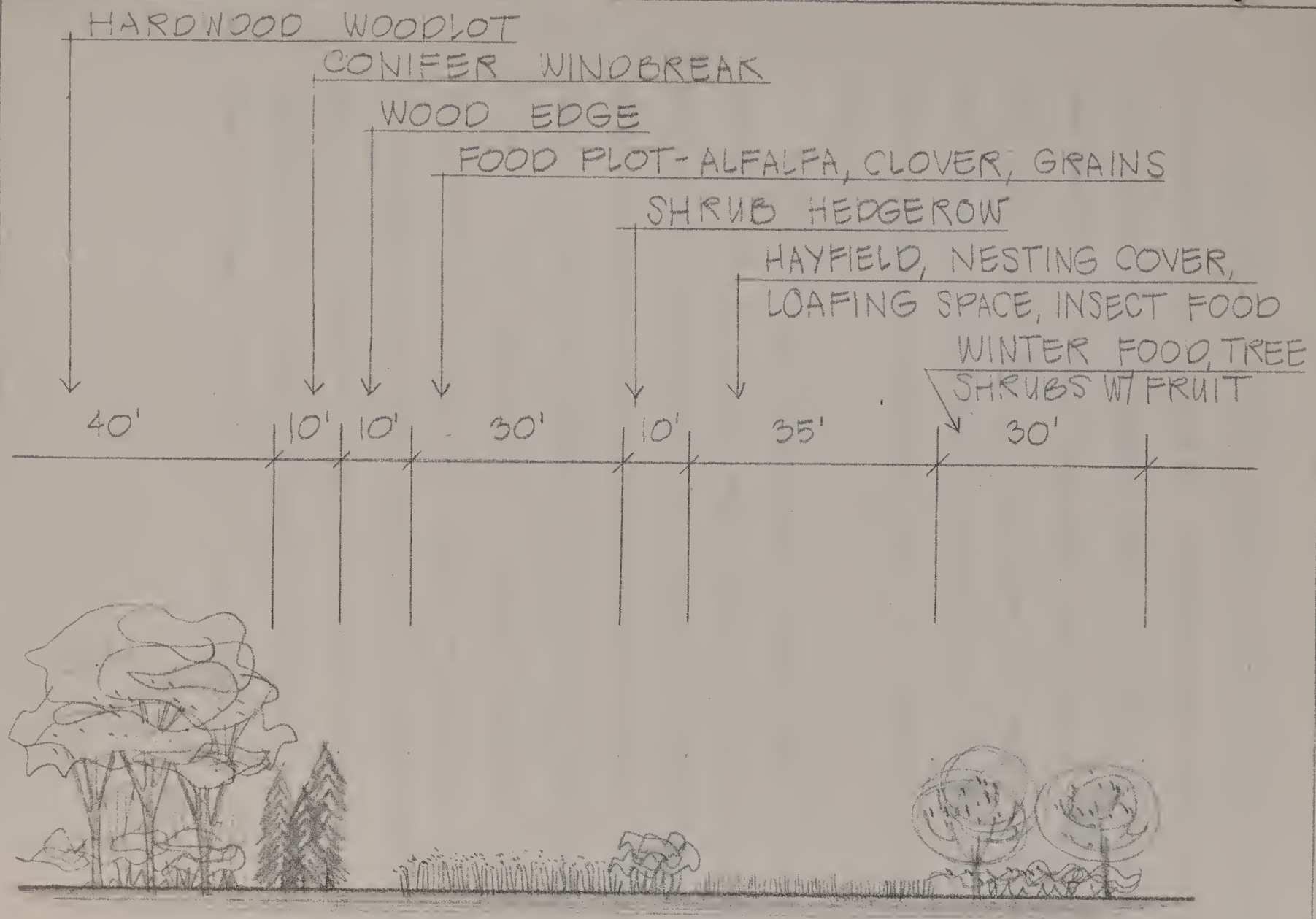
south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

WILDLIFE MANAGEMENT AREA
BOSTON HARBOR ISLANDS



MANAGEMENT SECTION
SCALE 1" = 20'-0"

* WILDLIFE HABITAT IMPROVEMENT, DIVISION OF FISHERIES AND GAME, MATTHEW B. CONNOLLY, ET.AL.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

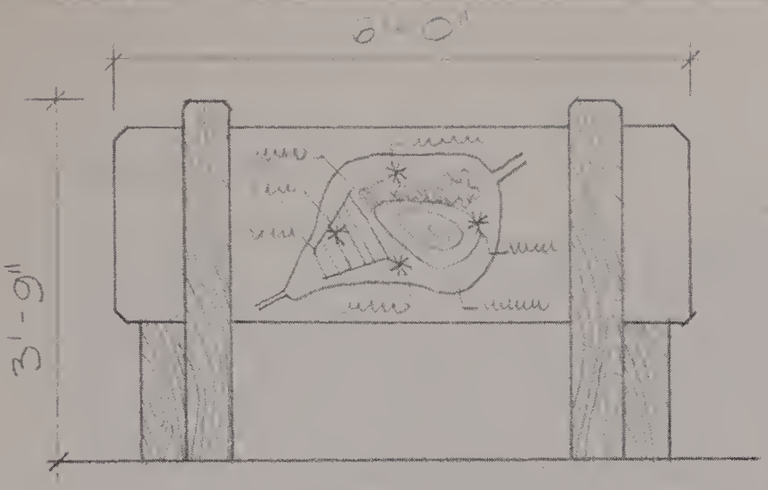
Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

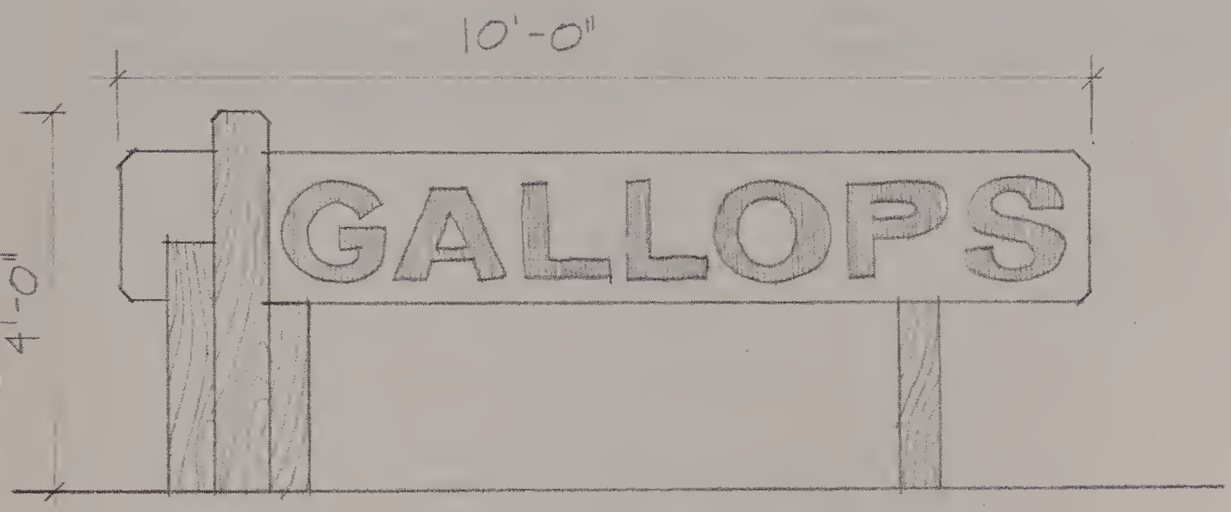
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

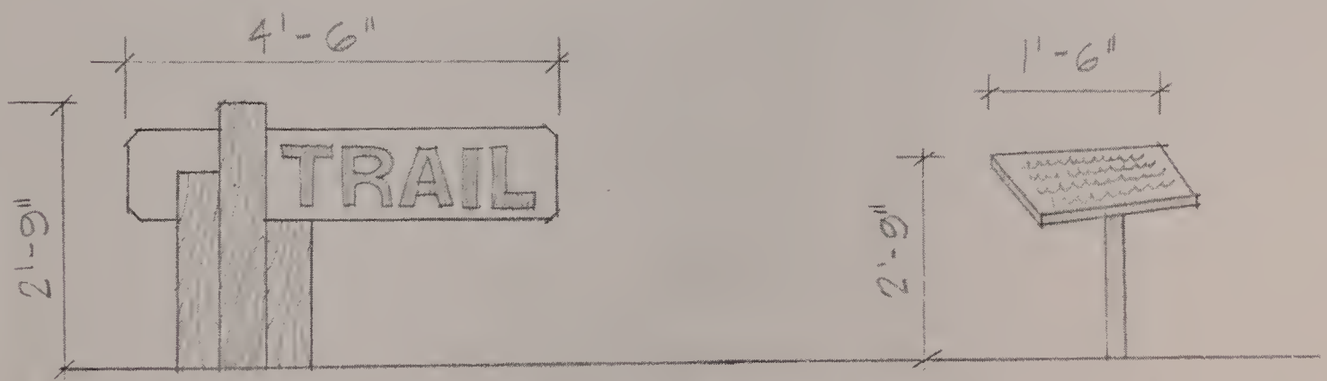
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

THOMPSON ISLAND

Thompson Island is currently owned by the Trustees of Thompson Academy. The Department of Natural Resources should acquire easements or lease the rights to those portions of the Island that are necessary for the implementation of the Comprehensive Plan. The purchase of the development rights or an easement for recreation and conservation purposes, if properly worded, would provide permanent protection of the Island's natural resources. The Department of Natural Resources will arrange for the development of facilities and conservation programs on the Island in accordance with the Comprehensive Plan and administer and maintain those programs.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

Utilities.

The provision of electricity and water to the Islands was also considered as a major cost that is subject to more detailed estimates during the implementation of the plans for those Islands to be serviced. The preliminary estimates of these costs were based on the analysis of a variety of alternatives and assumptions.

Thompson Island.

Thompson's Academy is currently preparing to install a new electric cable from Squantum. When completed, the Island will be adequately served with utilities.

THOMPSON ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
3. Barge Removal								
Timber	7	33,000CF		15			106,260	106,260
Steel	1		3,500EA	15			40,250	40,250
4. Seawall		6,920T	12/T	15			95,450	95,450
5. Pier								
Floats	4		1,700EA	15	7,820			7,820
Ramp	1		1,300EA	15	1,500			1,500
Bd. Walk				15	39,100			39,100
8. Sewer								
Septic Sys.	2		15,213EA	53	46,552			46,552
9. Building								
Demol.				25	1,875			1,875
Construction								
Comfort Sta.	1			25	50,000	50,000		100,000
Bathhouse	1	1,080SF	70/SF	25	94,500			94,500
Farm Bldg.	9	14,000SF	15/SF	25	38,300	224,200		262,500
11. Trails								
Unpav. 6'		21,000LF	67/100LF	25	5,288	12,337		17,625
12. Planting								
Decid.	150		40EA	53	4,590	4,590		9,180
Evergr.	100		30EA	53	2,295	2,295		4,590

THOMPSON ISLAND (Continued)

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
14. Equipment								
Drinking Fountain	5		700EA	50	2,625	2,625		5,250
Picnic Table	100		100EA	50	7,500	7,500		15,000
Benches	20		200EA	50	3,000	3,000		6,000
Trash Cont.	25		10EA	50	287	288		375
Firepl.	100		120EA	50	9,000	9,000		18,000
15. Signs								
Large	2		3,000EA	25	7,500			7,500
Small	25		200EA	25	750	5,500		6,250
16. Trans. to Isl.				35	9,450	5,400		14,850
17. Miscel.					18,727			18,727
TOTAL					350,553	326,634	241,960	919,147

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

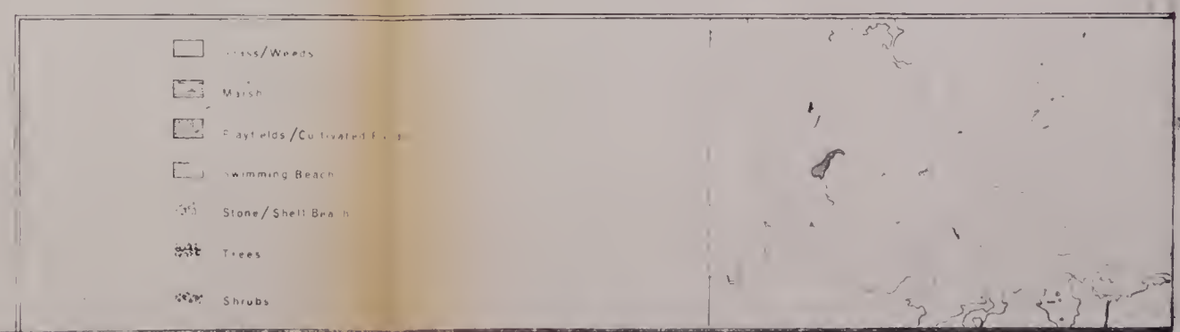
---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Thompson (Maximum Daily Use - 800 Persons)			
Model Farm Visitation	70,000	$2.00	$ 140,000
Swimming	30,000	3.00	90,000
Picnicking	10,000	2.00	20,000
Boating	500	6.00	3,000
Hiking, Nature Walks	40,000	2.00	80,000
			$ 333,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.



THOMPSON ISLAND
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400
scale in feet

Thompson - 187 Acres

Date July 1971

Source City of Boston 1965 Aerial & Photometric Topographic Survey-BRA

prepared for:
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by:
mapc Metropolitan Area Planning Council

Thompson Island Support Documentation, 1973 March

Moon Island Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

Moon Island
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

MOON ISLAND

Description and History. Moon Island consists of approximately 44.6 acres, and is connected by a two lane causeway to Squantum in Quincy. The Island is now owned by the City of Boston. In colonial times it was known as "Mannings Moone" and was used for grazing and farming.

A large drumlin about 100 feet high is the dominant physical feature. Good views are a major asset of the top of this hill. Quincy Bay, Dorchester Bay, Squantum, Long Island, Thompson Island, the Blue Hills, the city skyline and several other islands are easily identified from this vantage point.

In 1878 the City of Boston began construction of a large 7½ foot-diameter, brick sewer from Columbia Point to Squantum, under Dorchester Bay and out to Moon Island under the causeway. Four huge cut granite storage tanks, with a capacity of fifty million gallons, were constructed on Moon Island as a storage reservoir to hold the raw sewage. The gates to the reservoir were opened twice daily on the outgoing tide and the sewage flowed into the Harbor. At the time, this gigantic project was considered the best solution to the problem of pollution from sewage in the Inner Harbor. It cost the City six million dollars and was completed in 1884, at which time, it attracted world-wide attention.

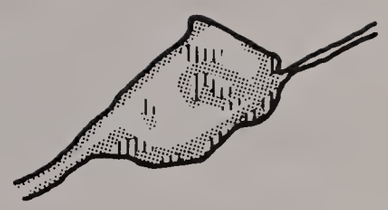
MOON ISLAND

SLOPE

0 - 5%

5 - 12%

12% and above



GEOLOGY

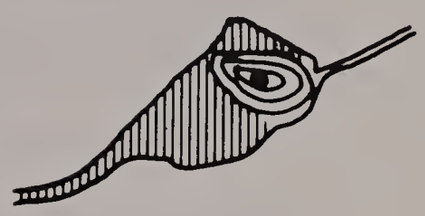
Beach, Sand, Gravel

Silt, Muck, Peat

Man-made

Drumlin

Bedrock



BEACH AREAS

Mostly Sand (fine sand)

Coarse Sand (coarse grade sand, pebbles, shells)

Mixed (coarse sand, pebbles, shells, small rocks)

Rocky (small rocks to 8 inches in diameter)

Seawall/Rip-rap (broken/intact seawall/rip-rap)

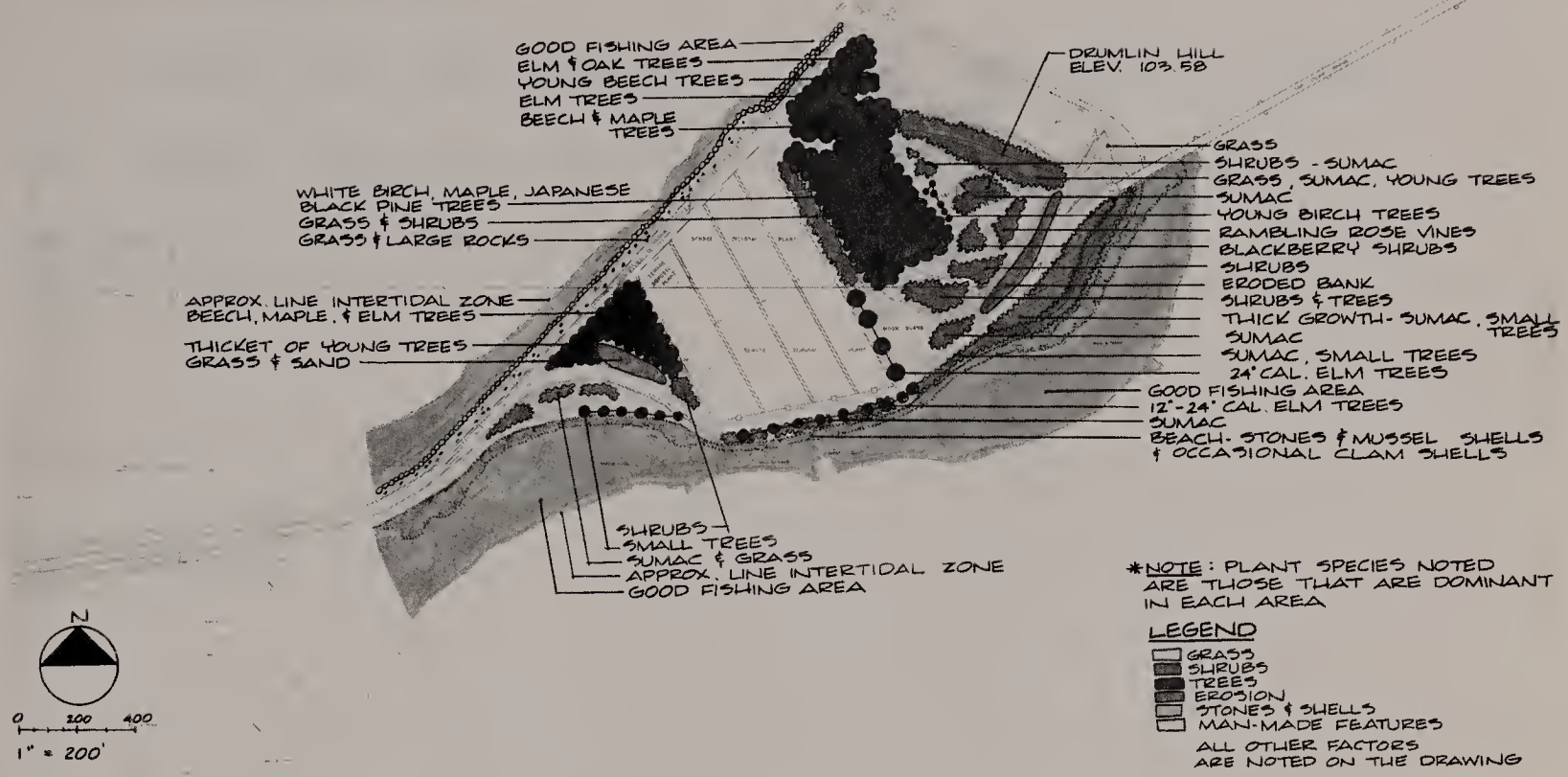
Steep-eroded Banks (areas of major erosion)

Bedrock (outcropping)

The huge reservoir has an average length of 900 feet and each tank is 150 feet in width. The walls are 17 feet high and about 7 feet thick at the base. The floor of the banks are constructed with gutters of brick set in concrete to facilitate sludge removal. Two twelve foot-diameter, discharge sewers lead to the northern edge of the Island where they empty into the Harbor. While construction of the Deer Island Sewage Treatment Plant has removed the major load of raw sewage discharge from the Moon Island facility, it is still used to handle sewage from a portion of Dorchester and Squantum. About one million gallons of aw sewage are being sent daily into the Harbor through the Moon Island reservoir. This operation should be discontinued as soon as possible. It will require the construction of new sewers to connect Squantum and parts of Dorhcester to the MDC treatment facility.

In 1959 the Boston Fire Department constructed a fire fighting training facility on the northern end of the Island. This interesting facility features a concrete building that was designed to simulate the various roof shapes and window types found in the City of Boston. Special classes are conducted for various fire fighting problems. In 1960, the Boston Police Department established an outdoor pistol range on the southern side of the Island. The range is used for regularly scheduled training and practice by both the Boston and Quincy Police.

MOON ISLAND



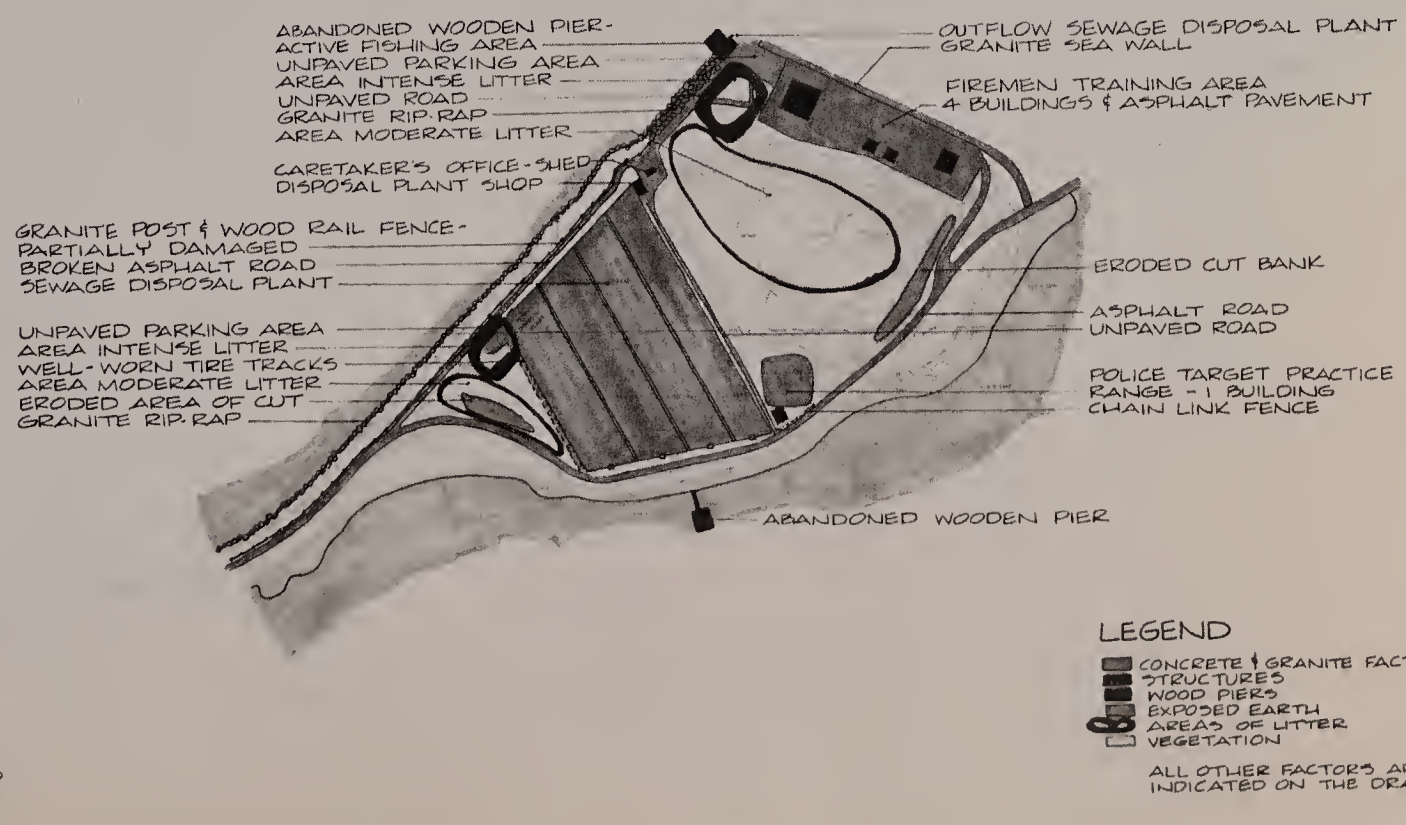
*NOTE: PLANT SPECIES NOTED ARE THOSE THAT ARE DOMINANT IN EACH AREA

LEGEND
- GRASS
- SHRUBS
- TREES
- EROSION
- STONES & SHELLS
- MAN-MADE FEATURES

ALL OTHER FACTORS ARE NOTED ON THE DRAWING

NATURAL FACTORS

MOON ISLAND



LEGEND
- CONCRETE & GRANITE FACTORS
- STRUCTURES
- WOOD PIERS
- EXPOSED EARTH
- AREAS OF LITTER
- VEGETATION

ALL OTHER FACTORS ARE INDICATED ON THE DRAWING

MAN MADE FACTORS

The partially wooded drumlin is protected from erosion by a course granite seawall on the northeast side and by rip-rap on the northwest side.

A rocky beach and extensive, low tide, clam flats lie along the southern shoreline. Good fishing is available near the sewage outfall on the north end of the Island.

MOON ISLAND

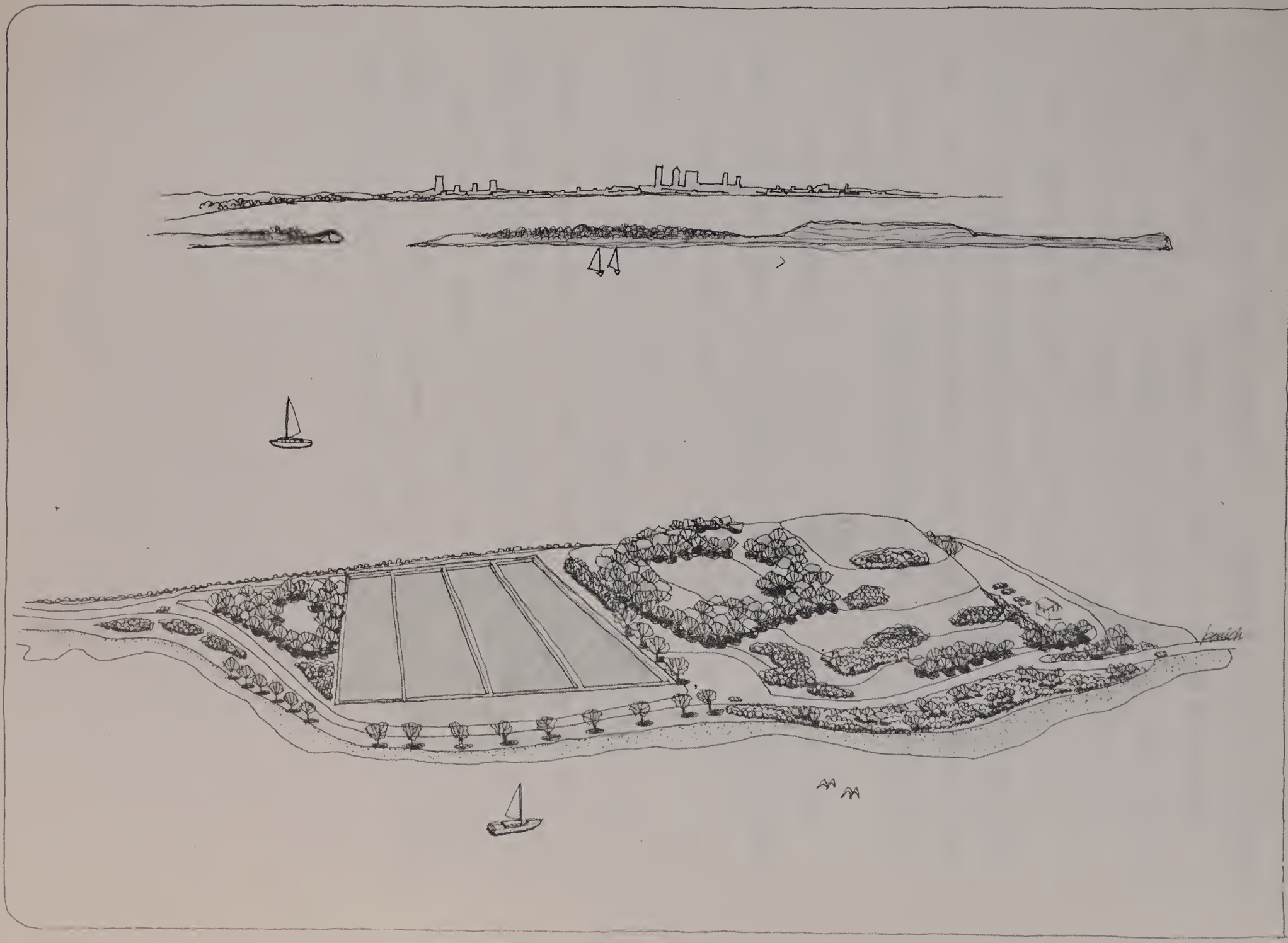
Plan. The plan for Moon Island emphasizes the two dominant physical features of the Island; the high vantage point offered by the drumlin, and the possible reuse of the sewage reservoir tanks.

Other important features of the plan include walking trails, three picnic areas, a fishing pier with fish cleaning facilities, and a comfort station.

The top of the drumlin should be left open as a viewing park for the enjoyment of the many vistas of the Harbor and surrounding shoreline. A picnic area with 25 tables is provided at the hill-top park. The steep sides of the drumlin are planted for erosion control and to discourage pedestrian use. Gravel walking trails are provided through the wooded areas and around the top of the hill to the various vantage points.

The City of Boston fire fighting academy is retained as an interesting and compatible facility, but the police pistol range should be relocated as it conflicts with the passive recreational enjoyment of the Island.

Several alternatives for the reuse of the sewage reservoir are being evaluated. This plan recommends the establishment of a fish hatchery as the most viable and attractive reuse. A small hatchery interpretive center with information on the life cycle of


FISH HATCHERY

the fish and other marine exhibits is recommended as an interesting educational facility. Another alternative that has some merit would be to develop the reservoir as species holding tanks for the New England Aquarium. Another picnic area with 10 tables is provided near the reservoir. A parking lot for 20 cars and a bus stop are provided near the interpretive center. As with the plans for Deer and Long Islands, control of vehicular access must be achieved if the ultimate recreational uses of Moon Island are to be achieved.

A counter-clockwise, one-way road loop mostly on existing road is provided around the Island to provide bus and auto access to the various facilities and as a turn-around for those not wishing to proceed to Long Island.

A large fishing pier, with fish cleaning facilities, is provided on the north end of the Island. A picnic area with 15 tables and fireplaces, a bus stop and parking lot for 40 cars, an a comfort station are provided near the fishing pier. As water quality in the Harbor improves, clamming on the flats on the south side of the Island should become a popular activity.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

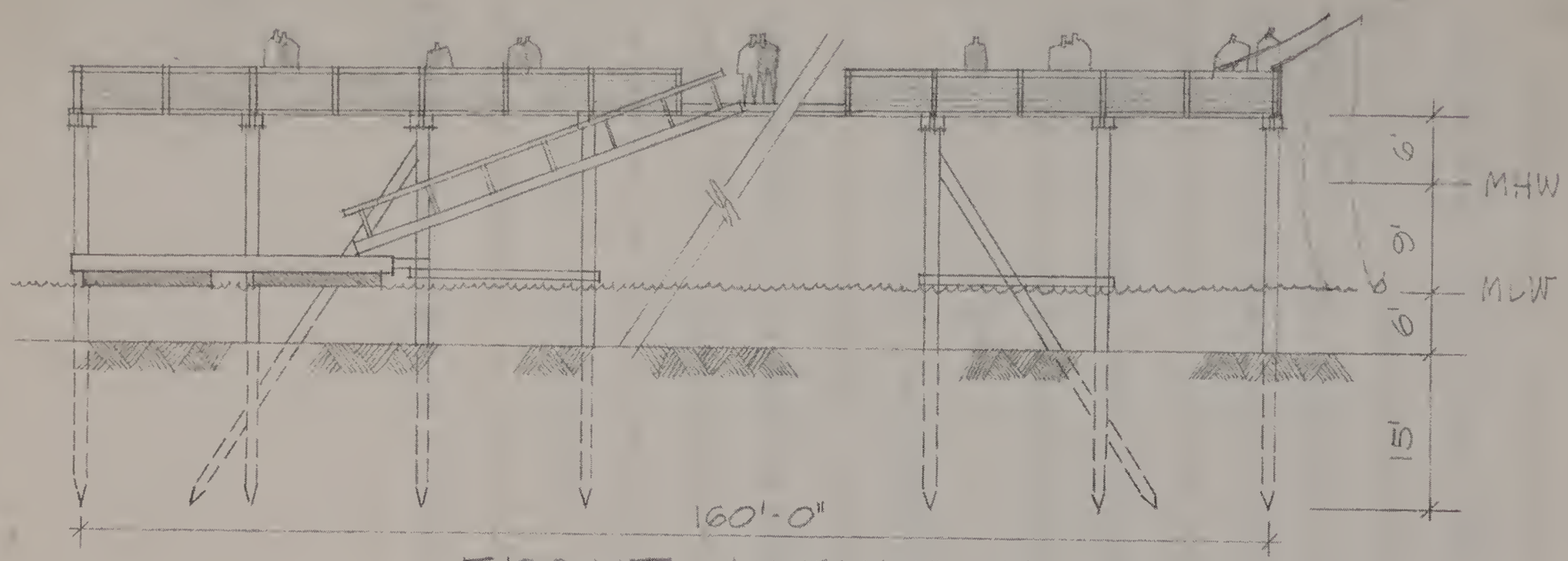
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

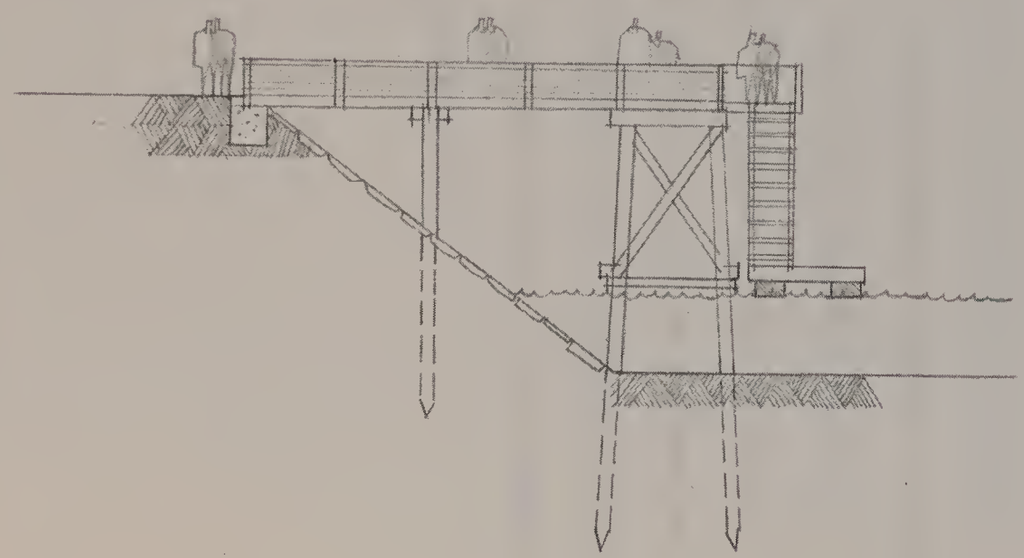
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

COMFORT STATIONS

Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

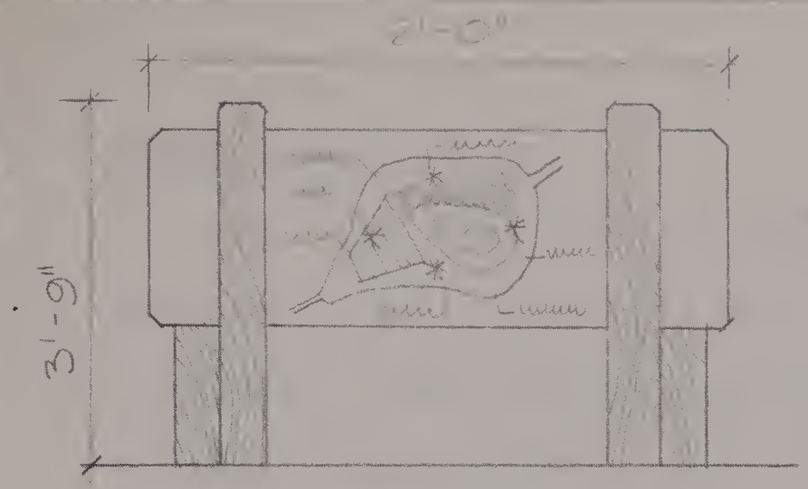
Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

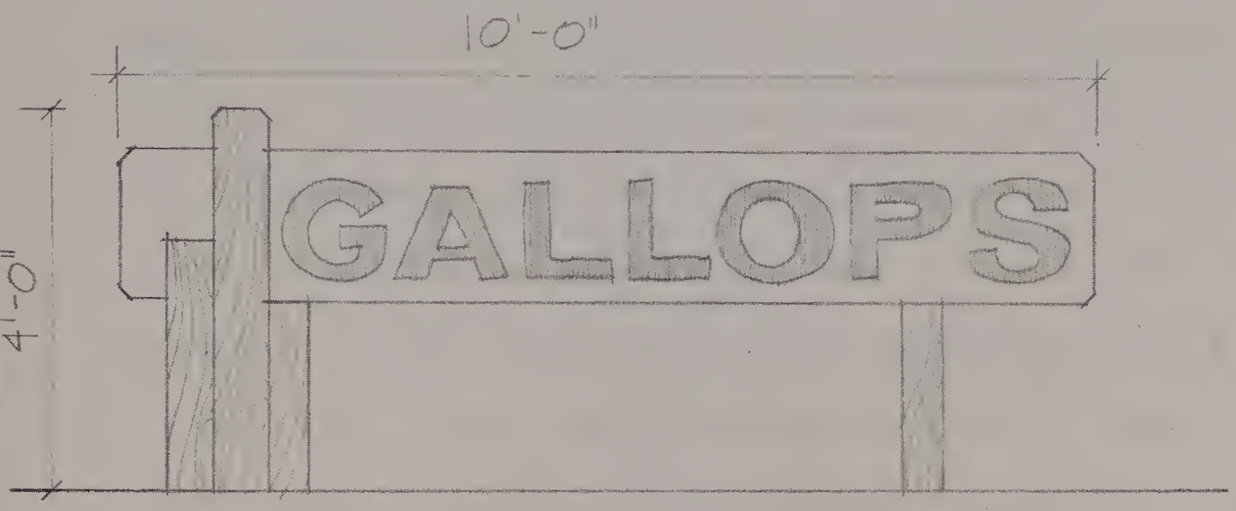
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

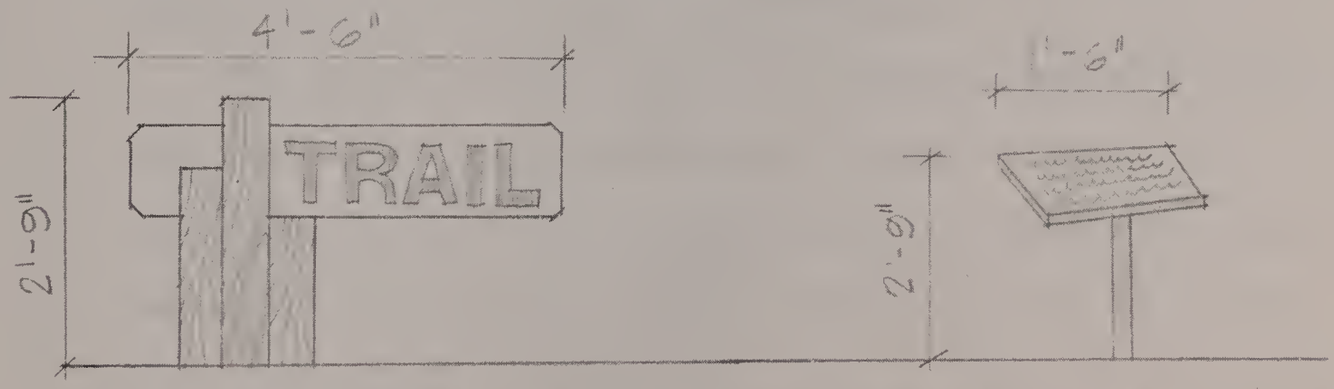
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

SEAWALLS AND REVETMENTS

The building of seawalls and revetments has received some attention in this report as a means of retarding the natural forces of erosion. Each case of erosion on the Harbor Islands is distinct and would require further, more detailed study than that within the scope of this Plan. In several cases the very excellent cut granite seawalls, constructed in the mid 1800's are in need of repair. These repairs should be done as soon as possible or extensive damage to the Islands may occur. The plans have indicated general areas on the major Islands where erosion is severe and protection appears necessary and desirable. The selection of these areas has included considerations of the size and use of the Island and its value for the total Park System. In all cases the benefits have surpassed the costs of providing the protection. This is, of course, subject to more rigorous analysis of both the costs and benefits.

The designs of the protective seawalls should be compatible with the natural character and use of the Islands. Access to the beach areas below the seawalls should be provided and the top of the wall or rip-rap berm should accommodate walking trails and not block views.

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

MOON ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
1. Clear & Grub		70,000SY	.35/SY	53	37,485			37,485
5. Pier								
Demo.				15	2,300			2,300
Const. 18'w.		100LF		15	25,530			25,530
6. Roads		1,500LF	50/LF	15	86,250			86,250
7. Paved Areas		1,800SF	.60/SF	15	12,420			12,420
9. Bldg.								
Const. Comf. Sta.	1	1,080SF	70/SF	25		94,500		94,500
11. Trails								
Unpav. 6'		4,000LF	67/100LF	25	3,350			3,350
Paved 6'		15,000SF	.60/SF	25	11,250			11,250
12. Planting								
Decid.	100		40/EA	53	6,120			6,120
Evergr.	33		30/EA	53	1,530			1,530
Ground Cover		13,500SY	.27/SY	53	5,585			5,585
14. Equipment								
Picnic Table	50		100/EA	50	7,500			7,500
Benches	10		200/EA	50	3,000			3,000
Trash Cont.	15		10/EA	50	225			225
Fire-place	15		120/EA	50	2,700			2,700
Drink Fount.	1		700/EA	50	1,050			1,050
Fish Cl. Facility			500/EA	50	750			750
15. Signs								
Large	1			25	3,750			3,750
Small	7			25	1,750			1,750
17. Miscel. Fencing		2,800LF	460/LF		19,737			19,737
TOTAL					232,281	94,500		326,782

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

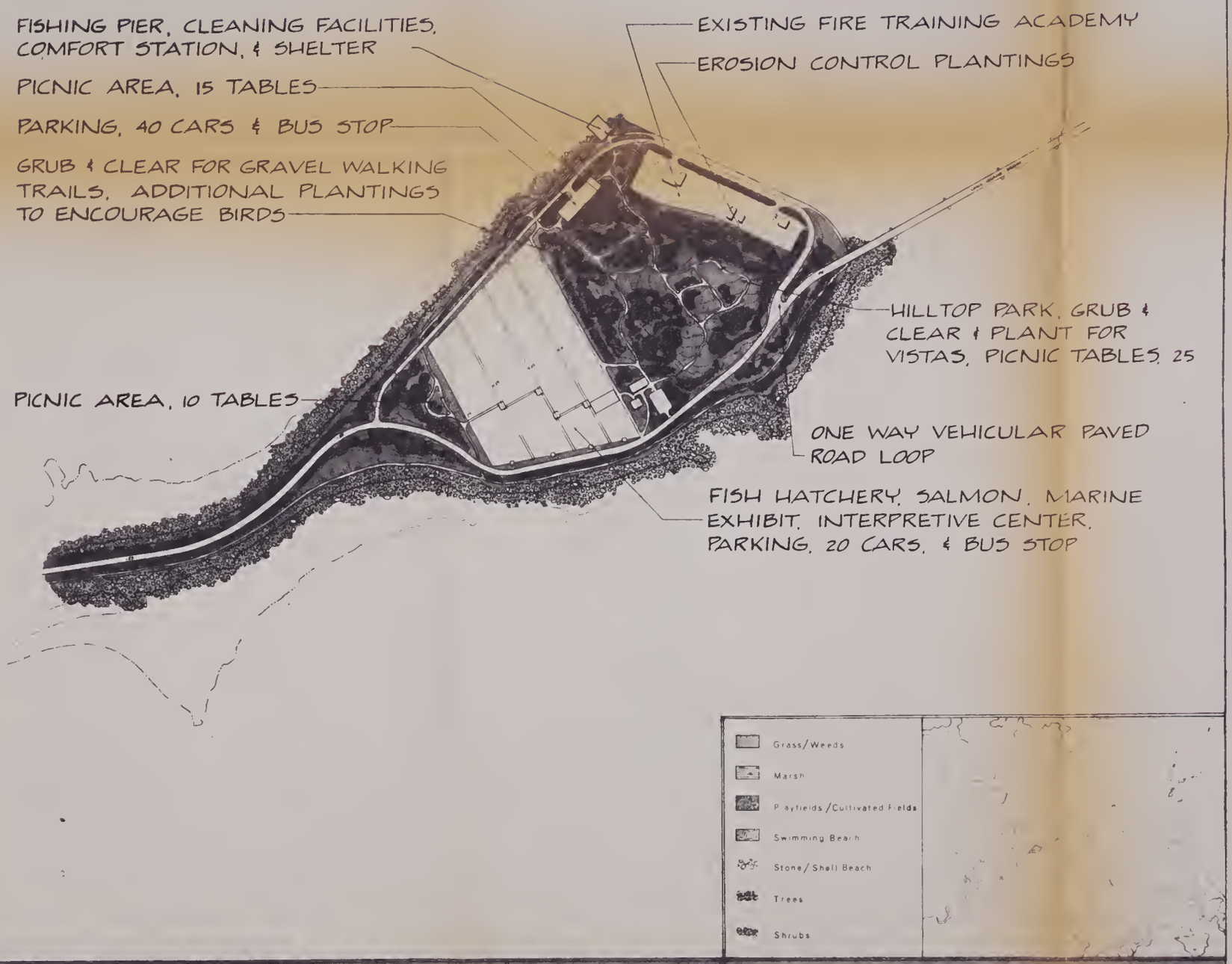
---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Moon (Maximum Daily Use - 500 Persons)			
Picnicking	10,000	$2.00	$ 20,000
Fishing	10,000	2.00	20,000
Fish Hatchery Visitation	10,000	3.00	30,000
Hiking, Nature Walks, etc.	30,000	2.00	60,000
			$130,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.



MOON ISLAND
PLAN PROPOSAL

N

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES
by
Metropolitan Area Planning Council

Moon Island Support Documentation, 1973 March

Nut, Raccoon, and Hangman Islands Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

Nut, Raccoon & Hangman Islands

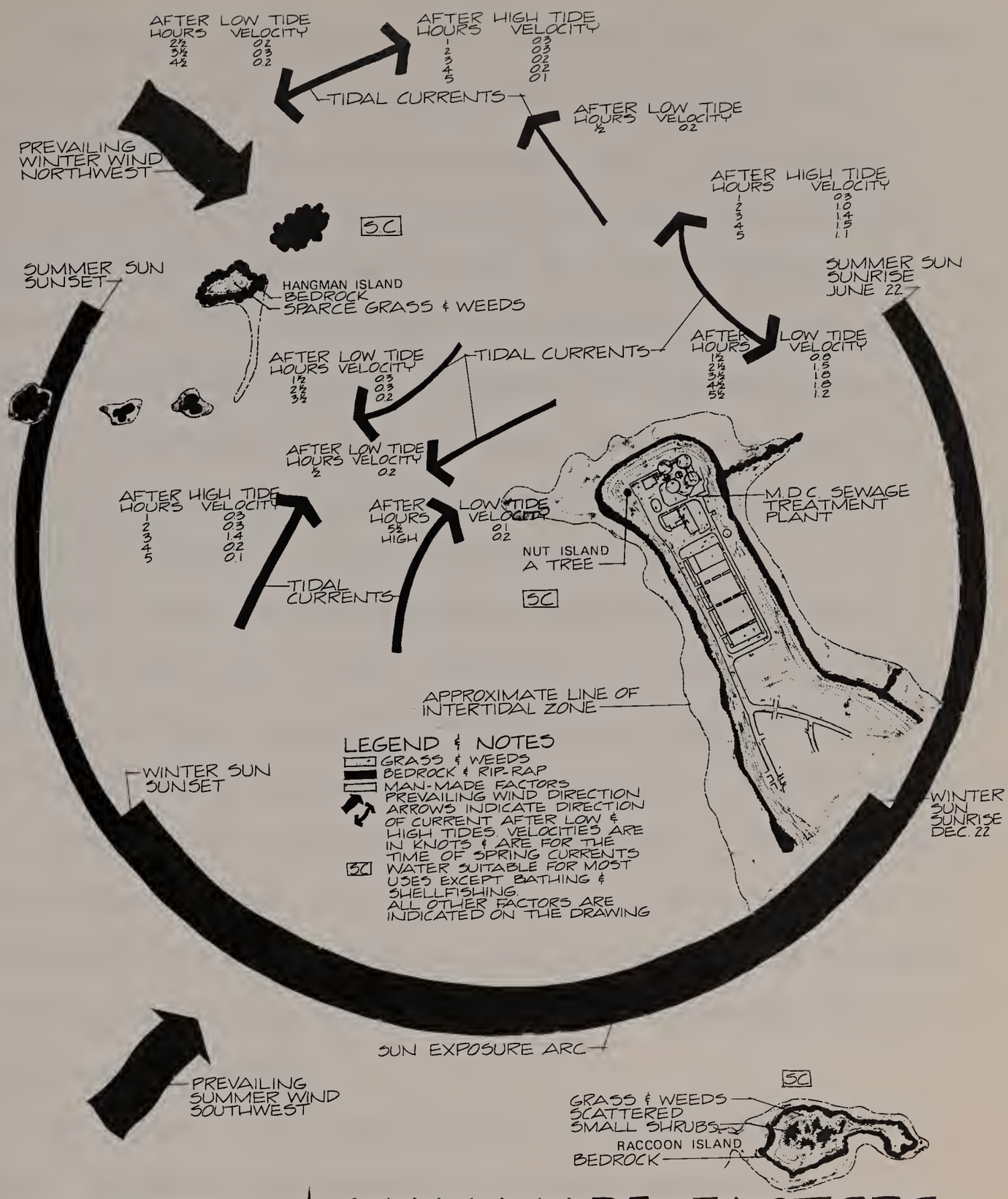
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973



NATURAL & MAN-MADE FACTORS

NUT, RACCOON and
HANGMAN ISLANDS

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400

scale in feet

Date: January 1972

Source: Aerial Photos & U.S.G.S. Quads

NOTE: Contours for design purposes only

prepared for

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by

mapc Metropolitan Area Planning Council

NUT ISLAND

Description and History. Nut Island was once a 4 acre Island just north of Great Hill on Hough's Neck. In colonial times cattle were kept on the Island and were driven to the mainland over a sandbar at low tide. A testing site for heavy ordinance was established on the Island in 1876 by the Alger Foundry of South Boston. Huge 15 inch guns fired projectiles weighing as much as 500 pounds at targets on Prince Head, Peddock's Island. In 1893, the MDC built a road and began enlarging the Island for a sewage treatment facility, that included a pumping and screening station and a raw sewage out-fall.

Today the Island is occupied by a modern primary sewage treatment plant built in 1950. The plant consists of three brick buildings, housing administration offices and pumping facilities, and several huge sedimentation tanks. A dominant man-made feature is a large, round, silver tank where methane gas, a by-product of the treatment process, is stored for use as a power supply for the operation of the plant. Visits to view the operation of the plant are accommodated and a visitor's parking lot is provided near the administration building.

The Island, now 17 acres in size, is flat and planted in grass. The shore is surrounded by a steep rip-rap wall.

RACCOON ISLAND

Description and History. Privately owned Raccoon Island is a tiny 3 acre bedrock outcropping, lying just off Manet Beach on Hough's Neck in Quincy. There is little recorded history of activity on this Island. In the 1930's a religious organization is known to have conducted summer school on the Island.

The north side of the Island consists of striking bedrock outcroppings which rise to an elevation of 30 feet above the surrounding bay. Mud flats, gravel beaches and rocky slopes provide a wide variety of marine habitat, which include such interesting features as small patches of eelgrass. These areas provide protection and nourishment for a variety of young sea animals.

During the summer youngsters swim from the Quincy shore to explore the Island. Some hunters use the Island during duck season.

HANGMAN ISLAND

Description and History. Hangman Island is little more than a sea-washed reef located far out in Quincy Bay. There is little record of the origin of the Island's name, but it is speculated that it comes from pirate days when the Island was used for executions. It once covered a much larger area and in 1884 several fishermen's huts were reported on the Island as well as a vegetable garden and other vegetation. Today the ¼ acre Island is a barren outcrop of dark rock with a small pebble beach on the south side.

NUT, RACCOON & HANGMAN ISLANDS

SLOPE

- 0 - 5%
- 5 - 12%
- 12% and above

GEOLOGY

- Beach, Sand, Gravel
- Silt, Muck, Peat
- Man-made
- Drumlin
- Bedrock

BEACH AREAS

- Mostly Sand (fine sand)
- Coarse Sand (coarse grade sand, pebbles, shells)
- Mixed (coarse sand, pebbles, Shells, small rocks)
- Rocky (small rocks to 8 inches in diameter)
- Seawall/Rip-rap (broken/intact seawall/rip-rap
- Steep-eroded Banks (areas of major erosion)
- Bedrock (outcropping)

NUT ISLAND

Plan. The plan for Nut Island emphasizes the site's need for screen planting and its potential for a fishing pier.

Nut Island helps define the boundry between Quincy and Hingham Bays and is, therefore, visually important to the rest of the Harbor. The treatment plant and strong man-made character of the Island contrast with the natural character of the other Islands and the two bays. Planting of trees that are tolerant to both the salt air and chlorine associated with the island location and sewage treatment process will soften the Island's man-made appearance and reduce the contrast between the natural character of the Harbor and the important man-made facility.

The construction of a small fishing pier with cleaning facilities, and a slightly enlarged visitors' parking area make the Island a valuable local recreational resource. Visits to the treatment plant are an important educational activity associated with the Island.

RACCOON ISLAND

Plan. The plan for Raccoon Island takes its varied natural environment as the determinant of its use. The Island is maintained in its natural condition for quiet contemplation and exploration.

No docks are proposed as several coves and beaches are suitable for small boat landings and the Island is a short swim from Manet Beach on Hough's Neck. Walking trails are provided from the landings to various points of interest. The clearly defined trails improve walking access and lessen trail blazing and the potential damage to the natural environment. An occasionl interpretive marker explains the natural habitats and other features.

Informal picnicking is an appropriate activity for Raccoon Island. However, formal facilities such as tables and fireplaces would detract from the natural attractiveness of the Island. Although a waste barrel is provided, picnickers should be encouraged to remove their own litter.

HANGMAN ISLAND

Plan. Hangman Island is one of the smallest islands in the Harbor. In its present condition, it serves as a loafing area for gulls, ducks, cormorants and other seabirds. It provides some visual interest in the large water area of Quincy Bay. The plan for Hangman Island leaves it as a conservation area that serves as an inter-tidal habitat for a variety of marine life and as an area for seabirds.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

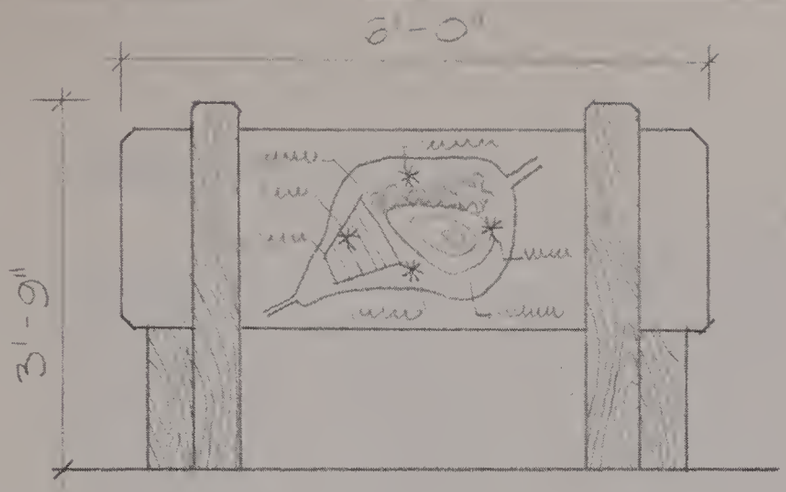
---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

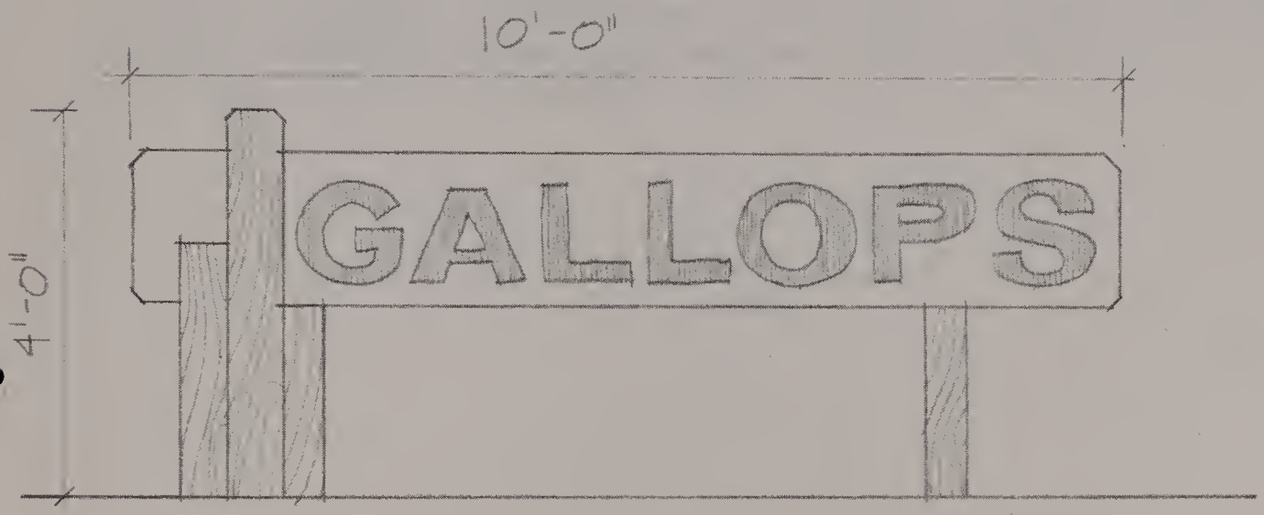
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

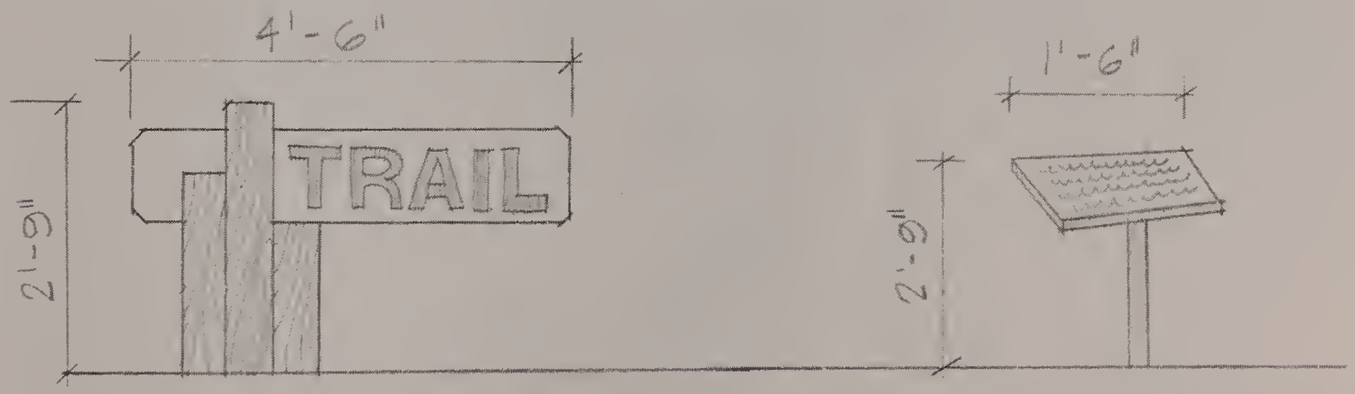
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.



INTERPRETIVE SIGN 1/2" = 1'-0"



ISLAND SIGN 1/2" = 1'-0"



MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

NUT ISLAND

This island is owned and administered by the Metropolitan District Commission. A continuing program of administration and management by the MDC will provide for the maintenance of the treatment facility and for limited recreational use of the Island in accordance with the Comprehensive Plan

RACCOON ISLAND

The Department of Natural Resources will acquire Raccoon Island and provide such improvements as are consistent with the provisions of the Comprehensive Plan.

HANGMAN ISLAND

The Department of Natural Resources will acquire and manage Hangman Island as a conservation area.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

NUT ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
5. Pier 10' W.				15		13,570		13,570
7. Paved Areas				15		3,105		3,105
9. Const.				25		87,500		87,500
11. Trails				25		2,850		2,850
12. Planting				53	22,950			22,950
14. Equipment Trash Cont.	5			50	75			75
TOTAL					23,025	107,025		130,050

NOTE: Figures may not total due to rounding.

RACCOON ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
15. Signs								
Large	1		3,000EA	25	3,750			3,750
Small	2		200EA	25	500			500
TOTAL					4,250			4,250

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

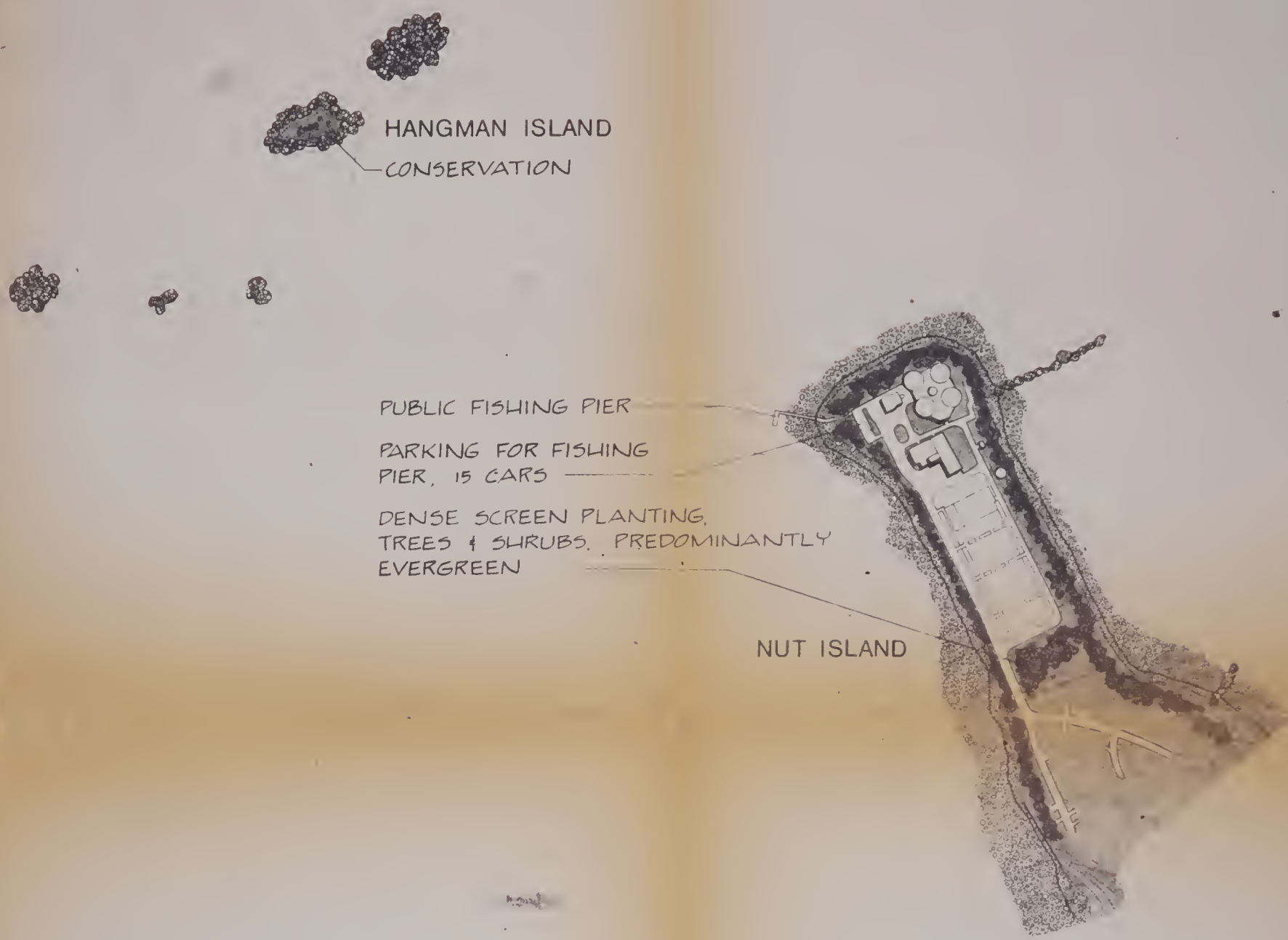
ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Nut (Maximum Daily Use - 50 Persons)			
Fishing	10,000	$3.00	$30,000

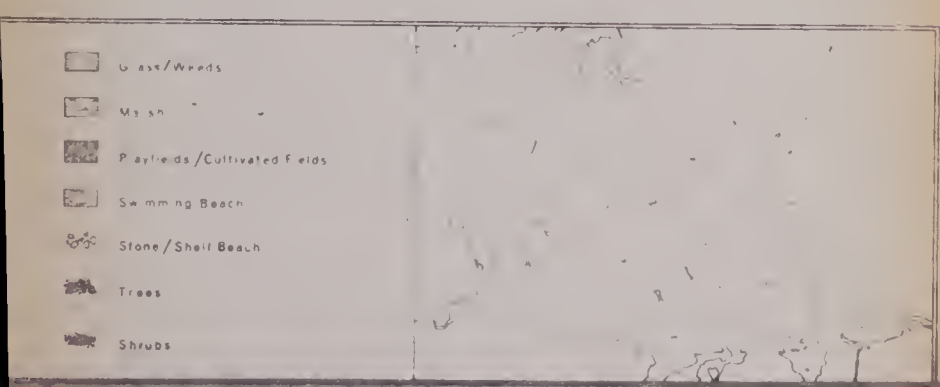
*The values in the Water Resources Council Docmentt are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

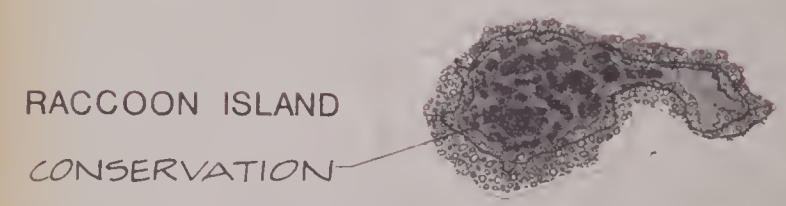
ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY.* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Raccoon (Maximum Daily Use - 20 Persons)			
Swimming	500	$3.00	$1,500
Picnicking	300	2.00	600
Hiking, Nature Walks	200	2.00	400
			$2,500

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.







NUT, RACCOON and HANGMAN ISLANDS
PLAN PROPOSAL

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

prepared for:
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

Metropolitan Area Planning Council

Nut, Raccoon, and Hangman Islands Support Documentation, 1973 March

Deer Island Support Documentation, 1973 March

Boston Harbor Islands
Comprehensive Plan

Deer Island
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

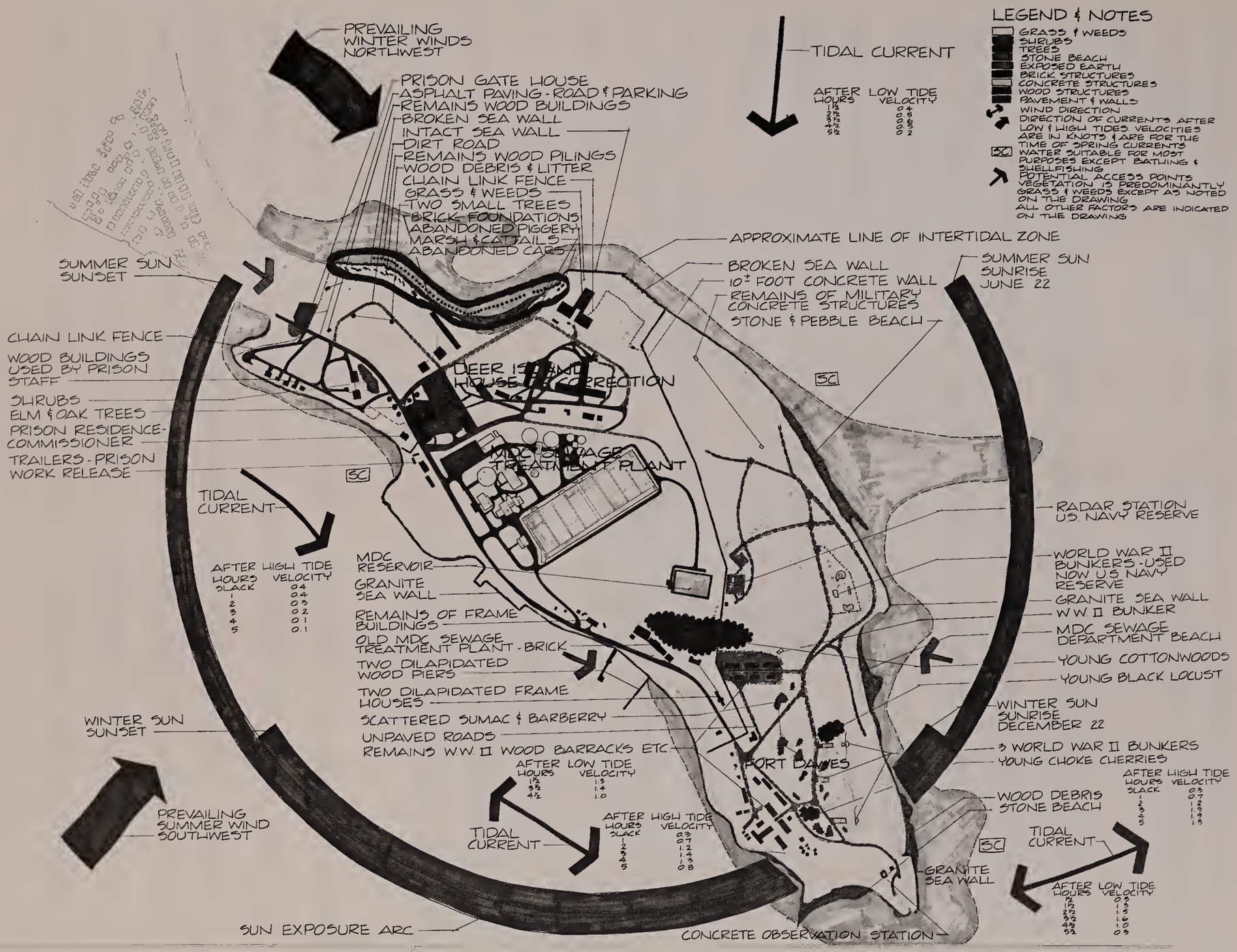
DEER ISLAND

Description and History. Deer Island was connected to the Point Shirely section of the Town of Winthrop by the filling of Shirley Gut in 1936. The Island has a land area of approximately 210 acres and is owned by the City of Boston, the Metropolitan District Commission, and the United States Government. Granted to Boston in 1634, it was named for the abundant wildlife, deer in particular, that foraged in the excellent forest land and pastures reportedly in existence at that time.

Friendly Indians were detained on the Island in 1675 during the King Phillip War. The following year the Island was converted to a prison for hostile Indians captured during the war. Agricultural uses predominated during the 1700's. In the early 1800's the Island was a popular spot for picnics and boat excursions. A hotel became a popular summer resort.

Smallpox broke out among Irish immigrants in 1847 and the Island was used as the site for a quarantine hospital. Hundreds died and were buried in unmarked graves on the Island. In 1849, plans were prepared for a large poorhouse. Construction was begun in 1850 and the facility began operation in 1852. The building became the House of Reformation in 1858 and was reorganized as the Suffolk County House of Correction in 1896. The existing prison still occupies the same building that was built originally as the poorhouse more than 120 years ago. The area around the

NATURAL & MAN-MADE FACTORS



DEER ISLAND

BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

N

0 200 400

SCALE IN FEET

prepared for

MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by

mapc Metropolitan Area Planning Council

prison has several dilapidated structures and foundation ruins, including the remains of an old piggery that was once run by the prison inmates.

Adjacent to the prison is the MDC sewage treatment plant. In 1889 a sewage pumping station was established on the Island. Coal furnaces and steam engines produced power to pump raw sewage into the Harbor. In the 1950's the MDC began planning for the new sewage treatment plant which was completed in 1968. The huge facility, with its settling tanks and vats, provides primary treatment for the sewage from 22 communities. The old pumping station is still operating as a part of the current process and will continue to do so for several more years until its functions are replaced in the new facility.

Today the dominant physical feature of the Island is a grass covered drumlin more than 100 feet high. A reservoir of treated effulent reused in the treatment plant occupies a portion of the top of this hill.

In 1941, Fort Dawes was established at the tip of Deer Island. The Army fort covered an area of approximately 100 acres and was separated from the rest of the Island by a 12 foot high concrete wall. The top of the hill served as the Harbor Entrance Control Post during the Second World War. A radar and signal station was operated by the Navy. A battery of the most advanced, radar

DEER ISLAND

SLOPE

- 0 - 5%
- 5 - 12%
- 12% and above

GEOLOGY

- Beach, Sand, Gravel
- Silt, Muck, Peat
- Man-made
- Drumlin
- Bedrock

BEACH AREAS

- Mostly Sand (fine sand)
- Coarse Sand (coarse grade sand, pebbles, shells)
- Mixed (coarse sand, pebbles, shells, small rocks)
- Rocky (small rocks to 8 inches in diameter)
- Seawall/Rip-rap (broken/intact seawall/rip-rap
- Steep-eroded Banks (areas of major erosion)
- Bedrock (outcropping)

controlled, 16 inch guns were provided for under large concrete casemates. The guns were delivered to the Island but never actually mounted or fired. In 1946 the Fort was placed on caretaker status. Except for three small areas used by the Naval Reserve, the Fort is abandoned and has fallen into disrepair. The Fort is under the Jurisdiction of the Government Services Administration and the MDC is processing an application to acquire approximately 60 acres for recreation purposes and possible treatment plant expansion.

The high grass covered drumlin and the southernmost point of the Island offer the best vantage points for viewing the Harbor's only deep water moorage area and President Roads. Thus the views of the shipping activity in the Harbor are a major attribute of this Island. In addition these vantage points offer a unique view of the city skyline, Dorchester Bay and the surrounding shoreline.

There is a natural beach on the eastern side of the Island, which is currently used by the MDC as a limited recreation facility. The remainder of the shore is very rocky or protected by seawall and rip-rap. The Island offers no hint of its once extensive forest areas. Instead it is covered almost entirely with grass and weeds.

DEER ISLAND

DEER ISLAND

Plan. The plan for Deer Island emphasizes three major characteristics identified by the site surveys: the magnificent view from the top of the drumlin and from the southern point, the natural beach on the eastern side of the Island, and the location of Deer Island at the entrance to Boston Harbor.

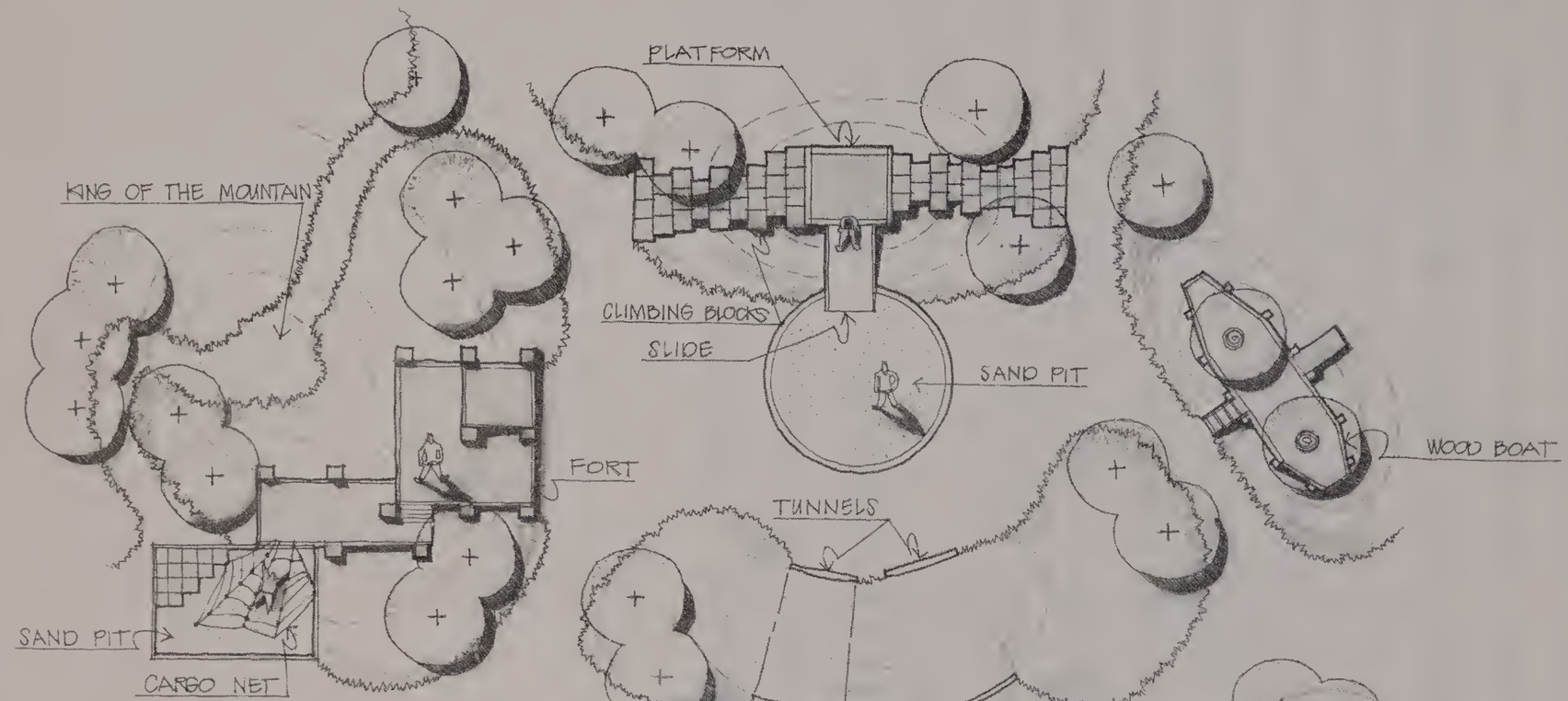
Other important features of the plan include a children's recreation area on the east side of the Island, playfields, picnic areas, the ferry landing and small boat dock, and off-shore moorage area for approximately 100 small craft, and the recreation support facilities adjacent to the landing area.

A major factor considered in the plan for Deer Island was the probable expansion of the MDC sewage treatment plant. The exact requirements and configuration of this expansion are yet to be determined. If the plant must be upgraded to include secondary treatment, a level area estimated to be five times as large as the existing facility may be required. Assuming an expansion of this scale, several alternatives were investigated and evaluated. One alternative would involve the extensive filling of Deer Island. The scale of filling involved would adversely affect the water near Winthrop. Another alternative that does not involve any fill utilizes the Fort Dawes area of the Island for recreation purposes. The third, and ultimately recommended alternative, would utilize the site of the House of Correction and an area of approximately 10 acres of fill on the north side of the Island.

The prison which is extremely old and outdated should be rebuilt elsewhere or consolidated with another institution. Use of the prison site for treatment plant expansion would preclude the need to fill a large 30 acre area of Deer Island Flats and would preserve the southern end of the Island for park purposes.

The southern end of Deer Island is designed as a large, informal park, emphasizing the passive pleasures of walking, resting on the grassy hillside, and viewing passing ships and the distant but dramatic city skyline. Picnic areas are located on many areas of the Island at spots where there is the greatest visual interest. The plan proposes an extensive planting program to reforest and visually enhance the Island as a fitting entrance to Boston Harbor. Screen planting for the sewage treatment plant is also recommended. A building, including a small interpretive center for Deer Island and a food bar with outside picnic tables is located near the ferry dock. In addition, a comfort station and bathhouse to serve the swimming beach and pleasure boaters are located in this area. A long fishing pier is provided with facilities for cleaning the catch. The existing swimming beach should be cleaned up and enlarged to accommodate approximately 200 swimmers and sunbathers.

CHILDREN'S PLAY

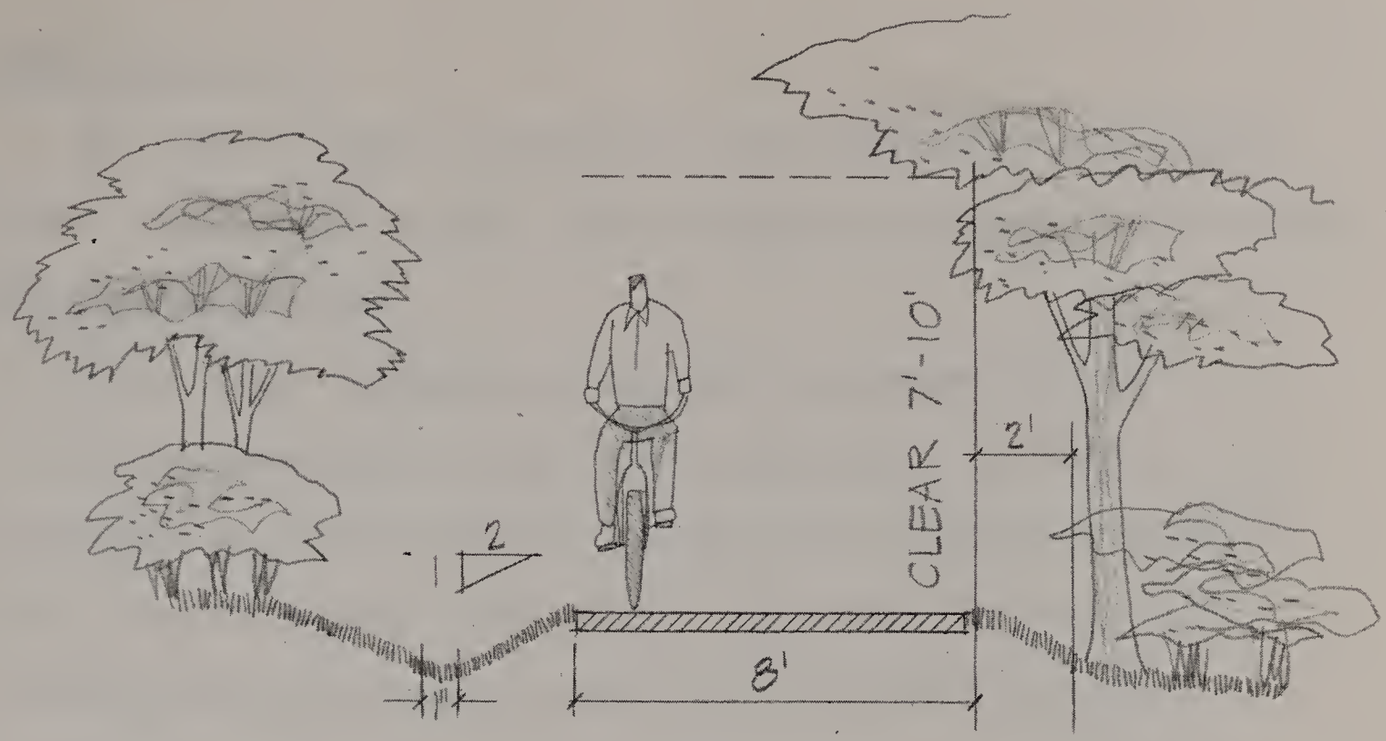


PLAN 1/4" = 1'-0"

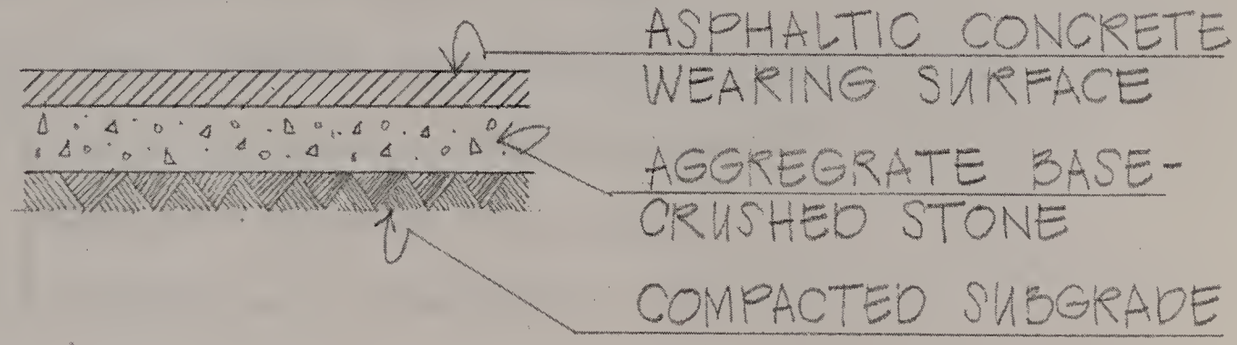
SECTION 1/4" = 1'-0"

A 3 mile system of bicycle trails extend along the perimeter of the Island providing excellent views toward the Harbor and the open ocean. The top of the hill is kept open and tree planting is arranged so as to frame views and enhance the vistas from the picnic area and the walking trails. The southern point of Deer Island is reserved for picnicking and viewing of ships passing by in President Roads. In addition to an informal open area for field games, a young children's playground overlooks the Atlantic Ocean. It utilizes the site of some abandoned bunkers; and earth-forms are sculptured to provide children-scale spaces for play equipment and games.

A possibility of developing a moorage area for pleasure boats exists near the ferry dock. Dock space is provided for approximately 50 small boats at floats adjacent to the ferry dock.



TYPICAL BIKE PATH W/
CLEARING AND DRAINAGE
SCALE 1/4" = 1'-0"



TYPICAL SECTION-BASE DESIGN
SCALE 1" = 1'-0"

TYPICAL BICYCLE PATH DETAILS
BOSTON HARBOR ISLANDS

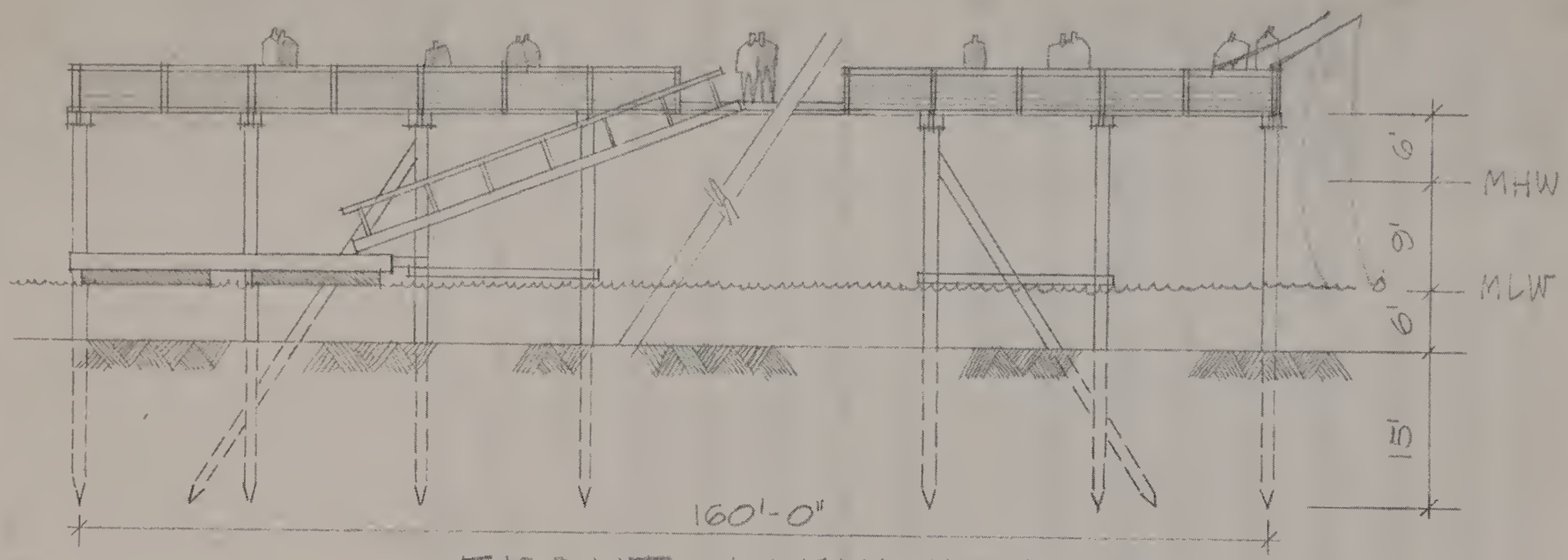
PIERS AND FLOATS

Two general types of piers have been defined by the Island plans. These include major ferry landings and minor ferry landings or small boat docks.

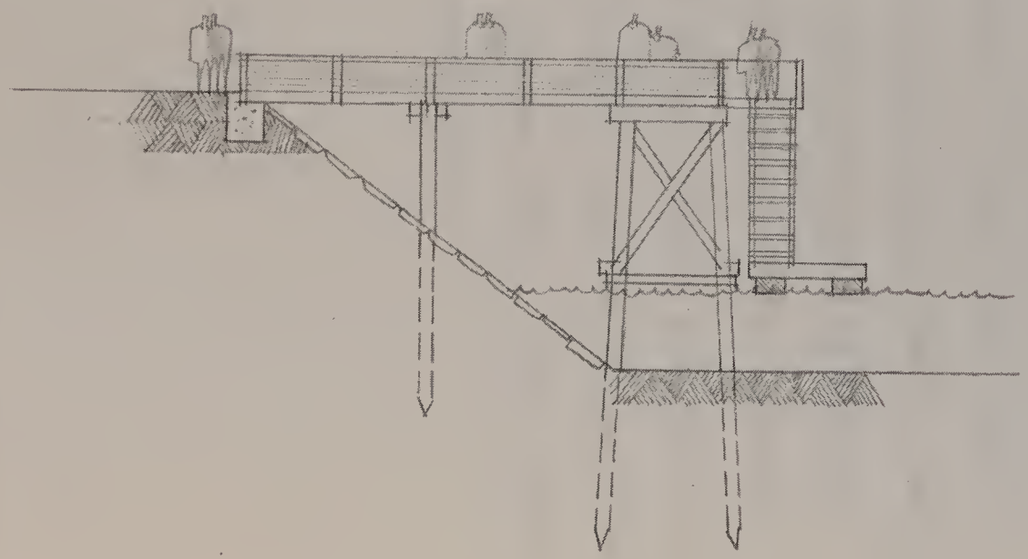
Major ferry landings are designed to accommodate the docking and unloading of the large ferry boats, operating on the Dorcehster Bay Ferry Loop and the main line Boston-to-Nantasket Ferry "spine"; smaller ferry boats; and private boats. With the exception of Spectacle Island all of the major proposed ferry landings are old, rehabilitated piers or currently used docks. Spectacle Island requires the construction of a new pier. Each of the piers needing rehabilitation is different and, therefore, requires an independent study and design.

Minor ferry landings are designed to accommodate the docking and unloading of the smaller 50 passenger ferries and private boats. These piers represent new construction and a typical design is included as an illustration. The treated timber piers are 10 feet wide with floor planking, bumper rails, and guard rails also made of timber.

MINOR FERRY LANDING & FISHING PIER
BOSTON HARBOR ISLAND



FRONT ELEVATION 1/16"=1'-0"



SIDE ELEVATION 1/16"=1'-0"

Both major and minor ferry landings are provided with treated wood, floating boat docks and ramps that rise and fall with the tide. Preconstructed units or modules of floating wood docks provide safe, flexible, attractive, and relatively inexpensive facilities for small boats and for the minor ferry landings. A module 9 feet, 6 inches wide and 30 feet long has been recommended as being the most stable for Boston Harbor conditions. The Island plans provide floating dock space for approximately 365 boats at a variety of Islands.

Fishing piers are combined with all of the ferry landings. Fish cleaning facilities, including running water, where available, are provided at all fishing piers. The fish cleaning station consists of a covered trough with spring-action water spigots. The wastes are carried to the center of the trough and then to a drain largely eliminating the objectionable mess remaining after fish are cleaned. On docks without running water, a foot operated sea-water pump might be a feasible alternative.

LANDSCAPING

The plans for the Harbor Islands have identified several types of landscape treatment, including selective clearing of underbrush, planting for erosion control, shade tree planting, screen and windbreak planting, and planting for wildlife habitat improvement.

It is important to recognize the unique qualities of the seashore environment offered by the Harbor Islands. The preservation and enhancement of these special qualities require a sensitivity to this natural resource. It affords the people of the Commonwealth rare opportunities for aesthetic, recreational and educational experiences. For this reason recreational development should be accompanied by an active conservation management program, emphasizing a cautions understanding of the possible effects on the various interdependent habitats.

SELECTIVE CLEARING

A program of selective clearing of underbrush and thinning of young saplings is recommended on several islands. Dense sumac, poison ivy, and young saplings have overgrown many islnnds as part of a natural process of plant succession from open fields to young and finally mature forests. Some recreational uses, views, walking trails, and conservation management programs justify clearing of carefully selected areas of brush and trees. Where possible, established trails should be improved before disturbing brush areas to build new trails. In all cases the possible effects of clearing should be considered before such changes are made.

PLANTING FOR EROSION CONTROL

Erosion of the banks on the drumlins of the Harbor Islands is very common. Planting of these banks with certain ground covers, grasses or easily rooting vines and creeping shrubs, is an important means of helping to prevent this erosion. The plants should be vigorous growing species, which root along procumbent (trailing on the ground) stems on the surface or with underground stolons or runners. Both types of growth tend to hold the soil and keep it from eroding in storms. Soil type, soil moisture, steepness of the bank, and the urgency of stopping erosion all govern the type of plant selected and the planting distances to be used.

SHADE, WINDBREAK AND SCREEN TREE PLANTING

The plans indicate shade trees in a variety of areas which would be used for the passive enjoyment of nature, for picnicking sites, for camping sites, and around buildings and other intensively used facilities. Deciduous trees offer the advantage of providing shade during the summer months and allowing maximum sun penetration in the winter after the leaves have fallen.

Trees are also recommended for windbreaks, especially around open exposed areas such as playfields, and on the north and northeast sides of various facilities. Evergreen trees, with their relatively dense year-round foliage, provide good windbreaks. A combination of a majority of deciduous trees planted on the

south side of trails and other facilities and a majority of evergreen trees on the northern side can provide the advantages of shade in summer, sun in winter and wind protection from the harsh northerly winds of the winter.

Screen trees, mostly evergreens, and other screen plants such as bush shrubs are indicated on the plans for a variety of purposes, including the assurance of privacy, screening unattractive facilities, and isolating one use from an adjacent, incompatible use. One picnic table or campsite can seem relatively private and isolated from adjacent fccilities by the careful provision of screen planting. A variety of shrubs are also especially attractive as a means of softening the lines of buildings and helping them appear more as a part of the Islands' natural environment. Several varieties of shrubs are also desirable for their contribution to the visual quality of the Harbor. These include flowering shrubs and varieties selected for their fall foliage.

PLANTING FOR WILDLIFE HABITAT IMPROVEMENT

All wildlife need food and cover. To adequately support wildlife, there should be a plentiful year-round supply of food close to cover which furnishes protection from predators and weather.

Wild fruits, insects, aquatic animals, grains, nuts, and green plants will generally provide an ample supply of food for some birds and small mammals from late spring to late fall. Food becomes scarce in winter and early spring. Shrubs that keep nuts and berries into the winter and remain above the snow cover, and other cover plantings that protect such natural food sources as grasses and grains, are important winter food sources.

Birds and small mammals need several kinds of cover to conceal nests, to provide shade from the hot sun, to provide shelter from chilling rains, to allow escape from enemies, and to protect against snow, cold and wind in winter. Grasses, weeds, and other low growing plants provide mating and roosting areas for some species; dense or thorny shrubs provide protection from predators and spots for nesting and loafing; and clumps of evergreen or other tall dense growth provide cover for winter protection. Selective cutting in a wooded area allows the penetration of sunlight, promoting the growth of succulent grasses, shoots and weeds attractive to some wildlife.

Open fields can be improved as a wildlife habitat by increased tree and shrub plantings to provide a variety of cover and food. Nesting cover and food for birds can be created by surrounding windbreaks and screen tree clumps with fruit producing shrubs, and loafing space and cover for ground nesting birds can be provided by the planting of grasses and grains, which will attract insect populations creating an additional source of food for birds. The combination of grasses, shrubs, and screen trees in a confined area creates a hedgerow between woodland cover and field feeding areas.

In addition to plantings, access to small bodies of water, marshes, and mud flats is an important element for attracting wildlife. Waterfowl and wading birds are dependent upon shallow water areas to feed and loaf. Existing marshes may be improved by selective planting. The careful dredging of portions of some marshes may increase the productivity and variety of plants and animals. Wildlife areas should be separated by screen planting and distance from incompatible uses. Birds and other wildlife need privacy, especially during the nesting season. Paths and nature walks should be close enough to wildlife areas for vantage points but not so close that wildlife will be disturbed.*

---

*Additional information on landscape treatment, including plant materials for seashore conditions, erosion control, and wildlife habitat improvement is included in the Boston Harbor Islands Comprehensive Plan, Appendix, p. 148, Metropolitan Area Planning Council, Boston, Massachusetts, October, 1972.

COMFORT STATIONS

Three types of comfort stations have been identified by the Island plans -- large comfort station/bathhouse combinations; smaller comfort stations; and chemical toilets.

The larger comfort station/bathhouse combinations are generally located adjacent to the largest swimming beaches or group camping sites and consist of two sets of rest rooms, each provided with shower stalls. The size of each facility varies with the number of persons it is intended to serve. Each comfort station/bathhouse combination is provided with hot and cold running water and a septic system or is connected with a larger sewage treatment system.

Comfort stations without bathhouses are provided in several intensively used locations away from large beaches and camping complexes. These facilities consist of two sets of rest rooms and are also provided with running water and sewage disposal systems.

The location of the comfort stations has been based on tentative considerations of surficial drainage and topography. Final location will depend on further analysis and detailed engineering studies of subsurface soil drainage.

Chemical flush toilets, attractively housed in a specially designed comfort station, provide an excellent means of providing public sanitation facilities in less intensively used areas or in locations that are not suitable for septic tank construction. Public demand for good self-contained sanitation facilities, as a way of reducing pollution problems, has resulted in dramatic changes in the quality and efficiency of chemical toilets. New self-contained, recirculating, flushing toilets provide a 99% decrease in fresh water requirements because they filter, chemically treat and re-use the same water to flush the bowl. Such facilities are currently being used in many national parks and recreation areas. They are attractively designed for public use and easy service and maintenance. They also provide an excellent interim facility while more permanent comfort stations are being constructed.

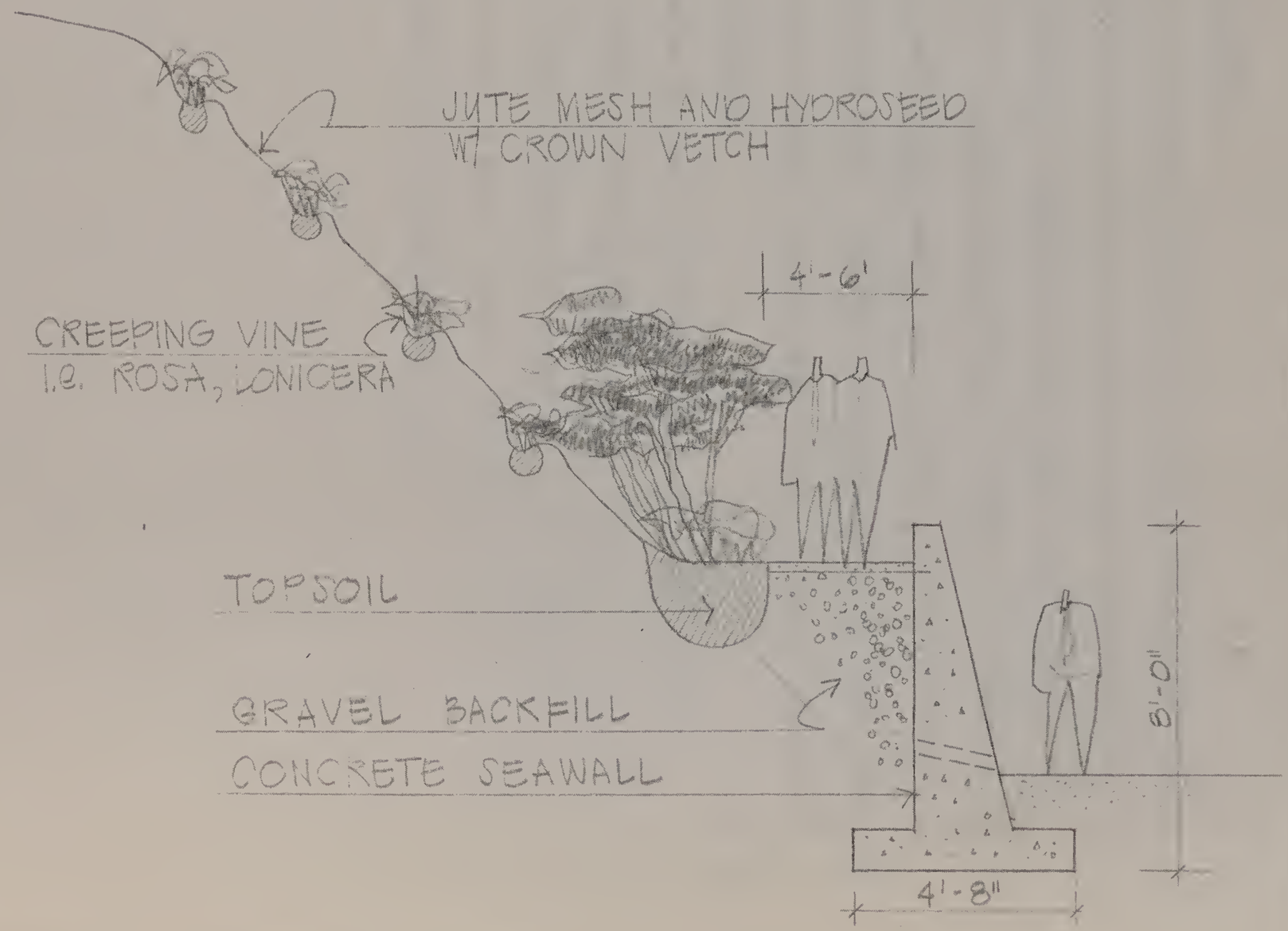
Other interim facility considerations may include the design and placement of special utility barges at the docks of some islands. Such a barge would have a water reservoir, chemical toilets, and a power generator, providing good flexibility, mobility, and security.

SEAWALLS AND REVETMENTS

The building of seawalls and revetments has received some attention in this report as a means of retarding the natural forces of erosion. Each case of erosion on the Harbor Islands is distinct and would require further, more detailed study than that within the scope of this Plan. In several cases the very excellent cut granite seawalls, constructed in the mid 1800's are in need of repair. These repairs should be done as soon as possible or extensive damage to the Islands may occur. The plans have indicated general areas on the major Islands where erosion is severe and protection appears necessary and desirable. The selection of these areas has included considerations of the size and use of the Island and its value for the total Park System. In all cases the benefits have surpassed the costs of providing the protection. This is, of course, subject to more rigorous analysis of both the costs and benefits.

The designs of the protective seawalls should be compatible with the natural character and use of the Islands. Access to the beach areas below the seawalls should be provided and the top of the wall or rip-rap berm should accommodate walking trails and not block views.

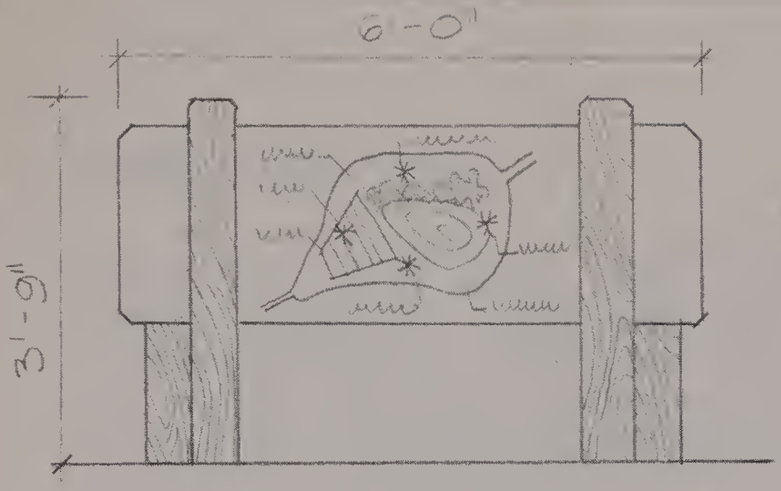
RETAINING STRUCTURE and EROSION CONTROL
BOSTON HARBOR ISLANDS



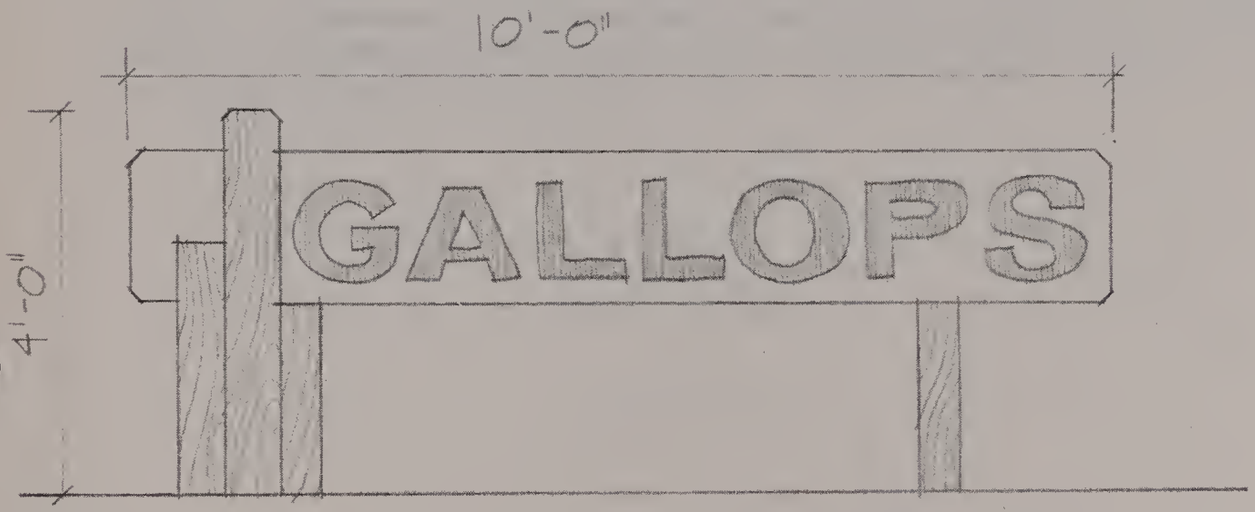
INTERPRETIVE MARKERS

Markers or signs are indicated on many of the Island plans to give information on the history and ecology of the Islands. Such markers should be compatible with their surroundings. On nature trails or in other predominately natural areas markers should have a rustic appearance and be made of natural materials, including stone and wood. Markers on buildings or in some historic areas might appropriately utilize more durable man-made materials, such as metal plaques.

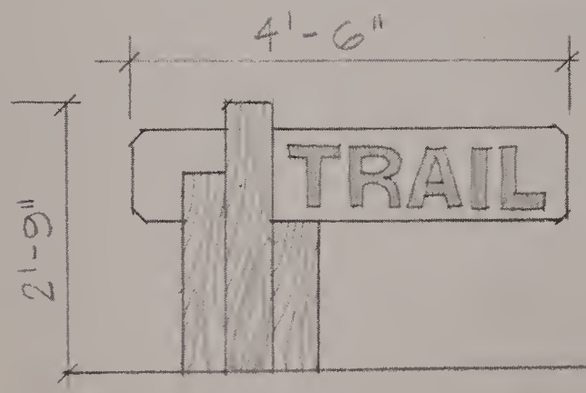
Interpretive centers in natural areas on some islands incorporate a shelter with markers, maps and other descriptive information. These shelters are located at the beginning of several nature walks through wildlife sanctuaries and in other areas with special environmental features.

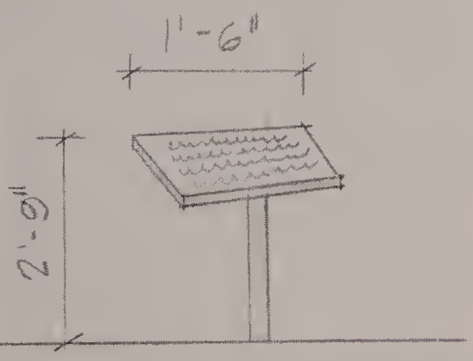


INTERPRETIVE SIGN 1/2"=1'-0"



ISLAND SIGN 1/2"=1'-0"





MARKERS AND POINTS OF INTEREST

ISLAND SIGN DETAILS
BOSTON HARBOR ISLANDS

ISLAND ADMINISTRATION

The administration and operation of the Harbor Islands Park System is clearly placed with the Massachusetts Department of Natural Resources. Other important participants in the operation of the Park System include the Metropolitan District Commission, the cities and towns surrounding the Harbor, and a variety of other public agencies and private groups. Many of the details of operation and administration will have to be determined by the Department of Natural Resources through a process of cooperation with the various responsible agencies and groups. The following description will tentatively discuss the administration of each Island. These considerations are based on numerous conferences with the parties involved and represent a general consensus of island administration that may be further detailed and modified by inter-agency agreements.

DEER ISLAND

The Metropolitan District Commission should develop and maintain Deer Island in accordance with the recommendations of the Comprehensive Plan and in agreement with the Department of Natural Resources. The ferry dock on Deer Island should be developed by an appropriate interagency agreement between the MDC and DNR with financial support provided by the funds made available from the Harbor Islands Legislation.

SUMMARY OF COSTS AND PRIORITIES

Introduction

The costs and priorities for achieving the recreation and conservation purposes of the Harbor Islands Legislation have been developed in conjunction with the plans for each Island. Direct capital costs for the construction of piers, trails, picnic areas, small boat docks, landscaping, buildings, and other facilities for the enjoyment and construction of the Islands' man-made and natural resources total approximately 27 million dollars. This figure is derived from a detailed analysis of each Island's plan. However, any cost estimates, which are based on large scale designs, are necessarily tentative. They are subject to the more rigorous studies of costs to be conducted during the implementation of the general plans.

Priorities and Phasing

The expenditure of limited funds for any project can best be made according to a fairly detailed time schedule of development that is based on a system of priorities. While a detailed time schedule aids in ordering the implementation of a project, flexibility in many of the work elements will permit changes when special, unforeseen opportunities or difficulties are discovered.

Three time periods or phases have been used to schedule costs for the Harbor Islands Comprehensive Plan. Each of these three phases has recommended projects to be started within certain specific time periods. However, the schedule is not intended to be a strict year-by-year listing of work to be completed. Instead the three phases indicate levels of priority. Phase I, 1972-1975, corresponds to projects of the first priority, Phases II, 1976-1980, and III, 1981-1990, equal second and third priorities, respectively. In several obvious cases, work begun in Phase I must be completed before Phase II projects are begun, in other cases Phase II projects may be started during Phase I or before certain Phase I projects are completed; thus, the dates and divisions between phases are relatively flexible.

Costs.

Development costs for the individual Island plans have been prepared by the MAPC from a variety of sources, including published unit cost data, current cost information from local contractors, equipment catalogues and the costs of MDC and DNR projects that are applicable to the Island plans. Actual bid prices received by the Massachusetts Department of Public Works and information from marine contractors were used to develop costs for seawall and pier construction. Costs for barge removal were obtained from the draft of the U.S. Army Corps of Engineers "Debris Removal Study" and from information provided by marine contractors. Costs for transportation of material and workmen were obtained from various marine transport companies working in the Harbor.

DEER ISLAND

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
5. Pier 10'w.	1	300LF		15	51,175			51,175
18'w.	1	300LF		15	76,705			76,705
Float	5		1700/EA	15	9,775			9,775
Ramp	1		1300/EA	15	1,495			1,495
6. Roads		1,000LF	50/LF	15		57,500		57,500
7. Paved Areas								
Parking 60 Cars	2	18,000SF	60/SF	15		24,840		24,840
Outdoor Dining	1	28,800SF	60/SF	15		19,872		19,872
8. Water		2,800LF		53		19,354		19,354
Sewer		2,800LF		53		25,321		25,321
Electric		2,800LF		53		46,511		46,511
9. Building								
Demol.				25	341,943			341,943
Const.								
Interpre. Cntr.	1	700SF	36/SF	25		31,250		31,250
Bathhouse	1	1,080SF	70/SF	25		94,500		94,500
10. Grading & Seeding				53	149,542	249,237	99,694	498,473
11. Trails								
Bicycle Paved 8'w.		20,000LF (160,000SF)	60/SF	25	59,962	60,037		120,000
Walking		3,000LF	67/100	25	1,500	1,425		2,925
12. Planting								
Decid.	1250		40/EA	53	38,250	22,950	15,300	76,500
Evergr.	750		30/EA	53	17,213	10,327	6,885	34,425
Shrubs	1000		10/EA	53	7,650	4,690	3,060	15,300
13. Fort Reno.				53		158,508		158,508

DEER ISLAND (Continued)

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
14. Equipment								
Drink. Fount.	3		700/EA	50	1,575	1,575		3,150
Picnic Table	100		100/EA	50	7,500	7,500		15,000
Benches	30		200/EA	50	4,500	4,500		9,000
Trash Cont.	30		10/EA	50	225	225		450
Fire-place	75		120/EA	50	6,750	6,750		13,500
Fish Cl. Facility	1		500/EA	50	375	375		750
Play Equip.				50	7,500	7,500		15,000
15. Signs								
Large	1		3,000/EA		1,000	2,750		3,750
Small	7		200/EA		1,750			1,750
TOTAL					786,385	857,397	124,939	1,768,720

NOTE: Figures may not total due to rounding.

BENEFITS

No discussion of the costs of a large recreation and conservation program would be complete without some mention of the benefits to be derived from the expenditure. It must be admitted from the outset that the means of estimating economic benefits of such intangible activities as recreation and the enjoyment of the natural environment are relatively crude. However, a recent report* by the Federal Water Resources Council has provided a number of economic evaluations for water-related recreation activities. These evaluations have been based upon a variety of approaches which measure the hypothetical willingness of the consumer to pay for recreational activities. They are expressed in terms of unit values for a typical outdoor recreation day. The Island plans and transportation services have been designed to allow estimation of numbers of recreation days for each island activity. The accompanying chart presents the Island-by-Island estimates of annual economic benefits based upon the type of recreation activity.

It must be noted that the above evaluation does not include many of the important, but more difficult to assess values associated with the plans. For example, it does not include the economic value of conserving the various salt-marshes or the economic effect of a recreation day on the productivity of the person who is recreating. While these factors are more difficult to evaluate they are just as important and sometimes more so than the data presented.

---

*Federal Water Resources Council, "Standards for Planning Water and Land Resources," July, 1970.

ECONOMIC BENEFITS OF ISLAND RECREATION

ISLAND & TYPE OF ACTIVITY	NUMBER OF ANNUAL RECREATION DAYS	VALUE/DAY* (ESTIMATE)	ANNUAL VALUE (ESTIMATE)
Deer (Maximum Daily Use - 1,000 Persons)			
Swimming	20,000	$2.00	$ 40,000
Play	40,000	2.00	80,000
Fishing	10,000	2.00	20,000
Picnicking	20,000	2.00	40,000
Boating	10,000	6.00	60,000
Hiking, Nature Walks	20,000	2.00	40,000
			$280,000

*The values in the Water Resources Council Document are presented within ranges under two categories, one for "general" recreation days and one for "specialized" recreation days. Because of the uniqueness of the Boston Harbor Islands general recreation values have been slightly increased depending on island uniqueness, a specific value, rather than a range, was assigned to each activity.

DEER ISLAND
PLAN PROPOSAL
BOSTON HARBOR ISLANDS COMPREHENSIVE PLAN

prepared for
MASSACHUSETTS DEPARTMENT OF NATURAL RESOURCES

by
MAPC Metropolitan Area Planning Council

Deer Island Support Documentation, 1973 March

Boston - Long Wharf and Nantasket - Hull Support Documentation,
1973 March

Boston Harbor Islands
Comprehensive Plan

Boston - Long Wharf
and
Nantasket - Hull

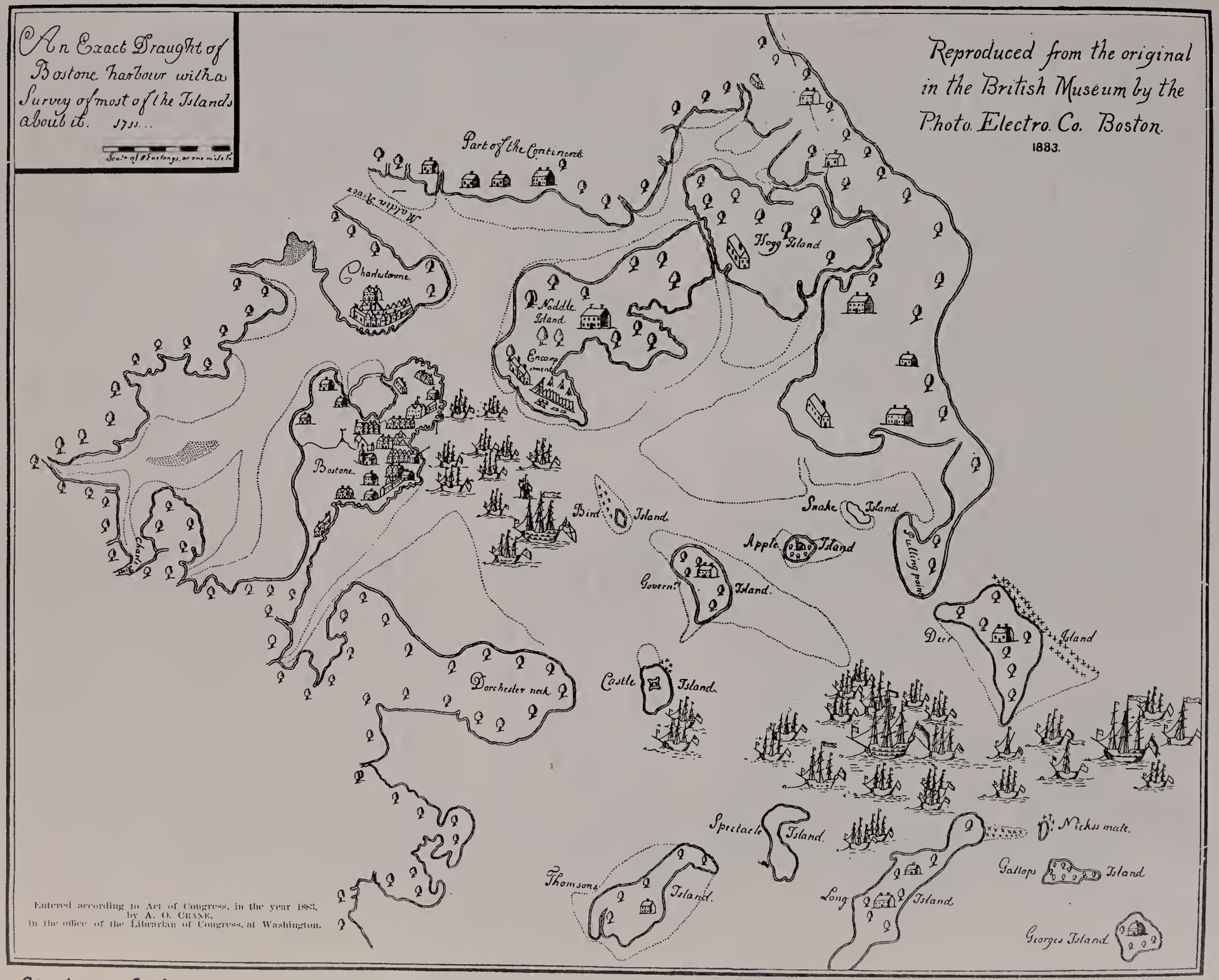
Support Documentation

prepared for:
Massachusetts Department of Natural Resources

by:
Metropolitan Area Planning Council

The preparation of this report was financially aided through a federal grant from the Land and Water Conservation Fund Program of the Department of Interior, Bureau of Outdoor Recreation Project #25-00065

March 1973

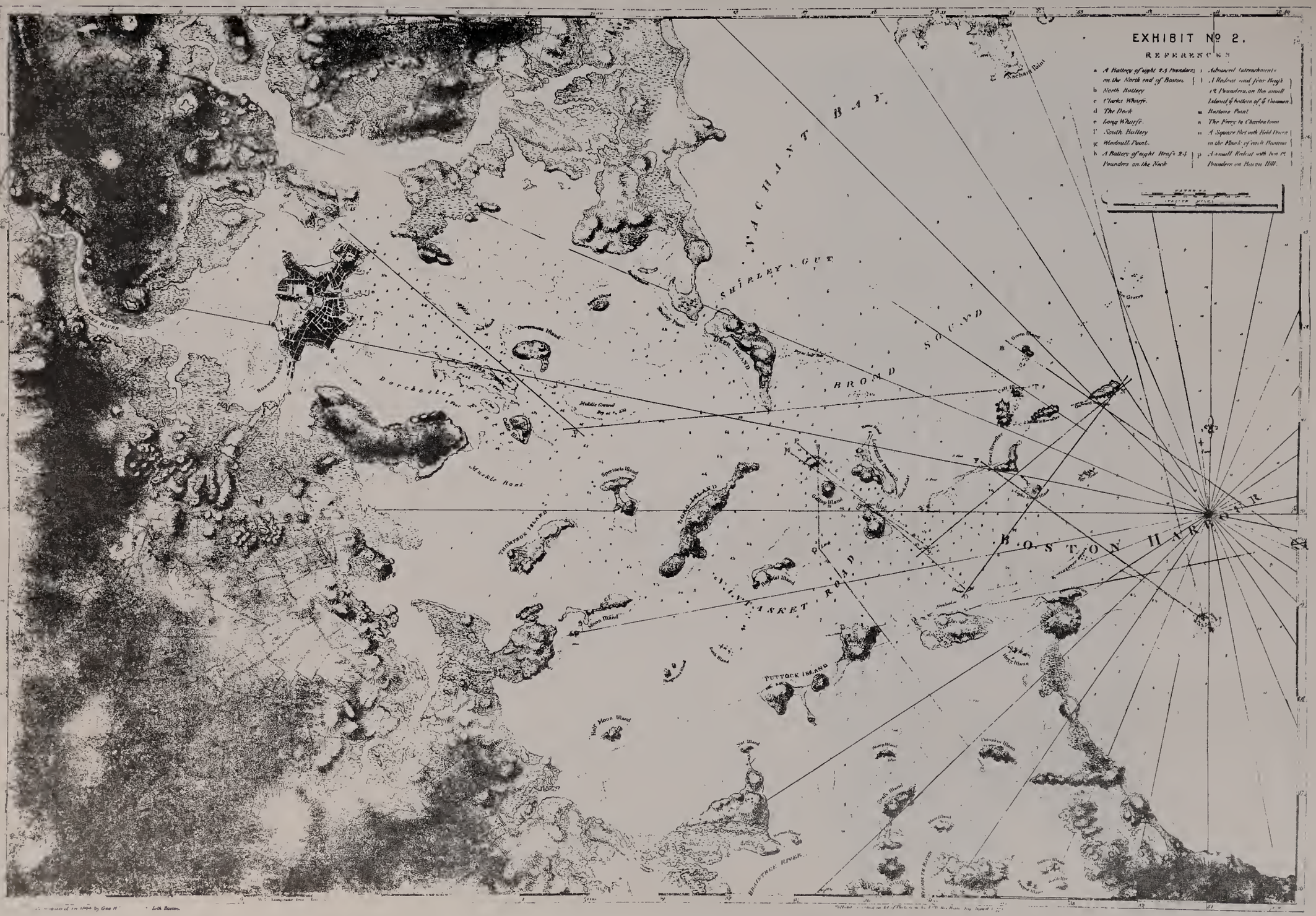


Boston Waterfront - Central Terminal

The proximity of downtown Boston's waterfront to the focal point of the regional highway and transit system is the major determinant in selecting the most desirable location for the Central Ferry Terminal. The Aquarium stop on the MBTA Blue Line is located at the intersection of Atlantic Avenue and State Street, immediately adjacent to Long Wharf. This area is also within easy walking distance of Government Center (Green Line), Washington Street (Red Line), and State Street (Orange Line) stations. Also, the Boston Central Business District is the focus of the region's expressway system. Existing ramps to and from the Central Artery are very close to the waterfront. The region's greatest concentration of off-street parking is in and around the commercial, financial and government districts of downtown Boston. The peak demand for the Harbor Islands will occur during summer weekends when usage of these parking facilities will be at minimum levels. It can be assumed that a reasonably large supply, approximately 500 spaces, of off-street parking will be available. This estimate is based upon existing parking supply. Most other conceivable shoreline locations would require the construction of expensive new parking facilities.

Long Wharf is a short walk from Boston's commercial and employment centers. These areas generate the highest density of pedestrians in the metropolitan area. It is also within "reasonable" walking distance from portions of the Beacon Hill and North End residential neighborhoods. Redevelopment of land adjacent to Long Wharf in the BRA's Waterfront Urban Renewal Project will add a substantial number of persons who will live and shop within easy walking distance.

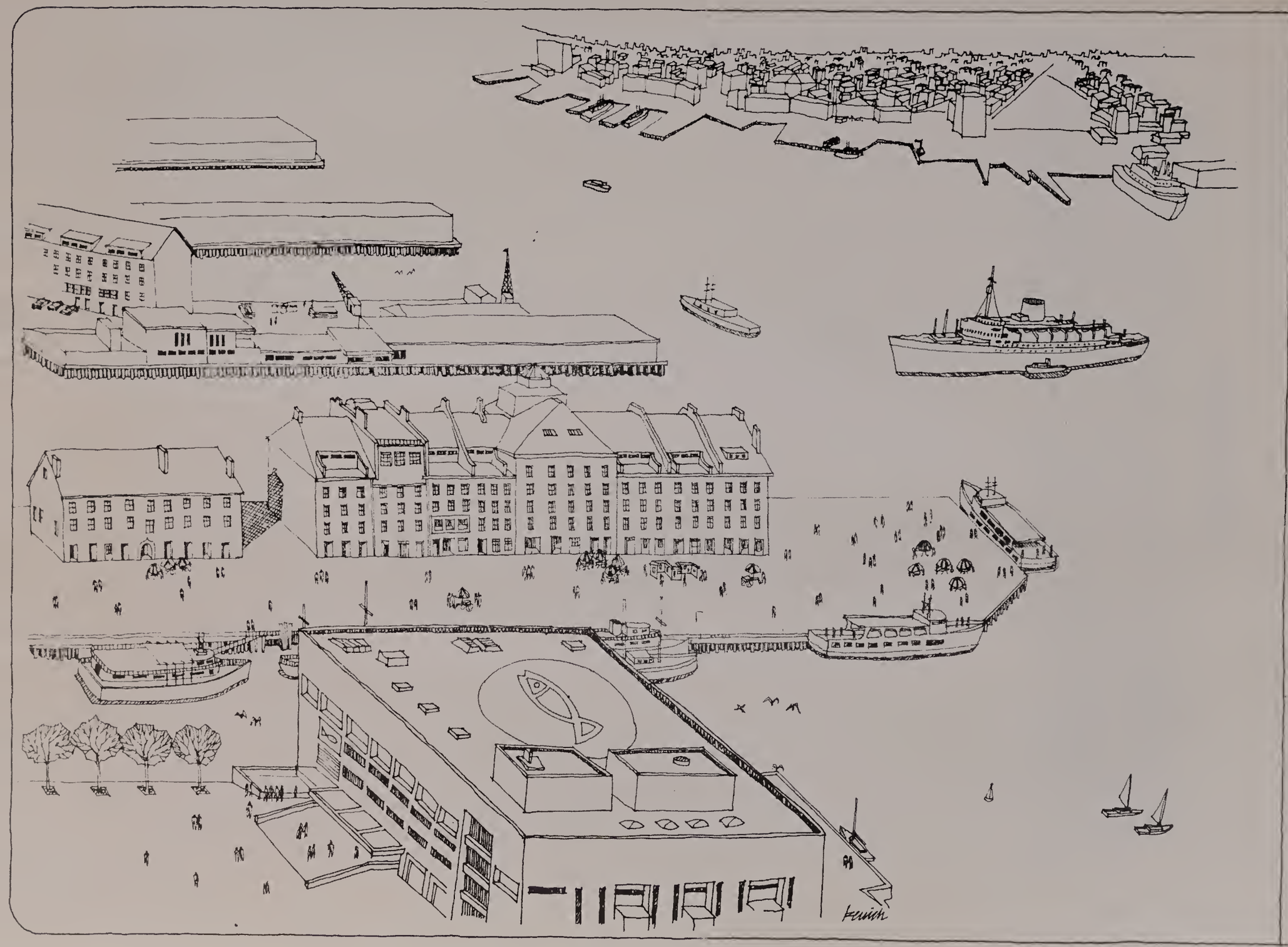
All of these factors indicate Long Wharf as the one ideal location for the Boston Waterfront Central Ferry Terminal. Such a terminal could be accommodated on the wharf or adjacent to the Waterfront Park being developed by the BRA in conjunction with the urban renewal project. The terminal building would consist of a Harbor Islands Park Information Center, with ferry schedules, maps, and photos of the Islands, ticketing facilities, a small restaurant, and an indoor passenger holding area. A minimum of 12,000 square feet should be sufficient to handle projected peak passenger loads. The terminal should leave a considerable open space on the wharf which may be utilized as an outdoor passenger holding area, a public viewing area and possibly an outdoor restaurant. It is recommended that placement of the terminal should not block the view to the Harbor from State Street. Sufficient dock space (approximately 520 lineal feet) should be provided for simultaneous loading of four ferries. Overnight docking of vessels would occur at Long Wharf, Nantasket and perhaps Deer and Long Islands. Additional storage and maintenance dock space should be provided elsewhere.



Courtesy of the Bostonian Society, Old State House, Boston, Massachusetts 02109

BOSTON-LONG WHARF

The Department of Natural Resources by appropriate long-term lease from the Boston Redevelopment Authority will arrange for the construction and operation of the Boston Waterfront Central Ferry Terminal on Long Wharf. The terminal building would consist of a Harbor Islands Park Information Center, ticketing facilities, an indoor passenger holding area for approximately 700 persons and a small restaurant. Two ticketing stations, separated from the passenger holding area, will speed the ticketing process. The Harbor Islands Park Information Center should include maps and photos of the Harbor Islands along with information on the ferry routes and schedules on the recreation and conservation programs on the Islands. Restaurant facilities providing short order meals, box lunches and beverages could be operated by a separate concessionaire.



FERRY TERMINAL

NANTASKET PIER

The pier at Nantasket Beach is owned by the Town of Hull. In a manner similar to Boston's Long Wharf, the Department of Natural Resources will lease the pier from the Town and improve it to meet the needs of the Park System. Reconstruction of the pier and the construction of a small ticketing station with an Islands Park Information Center and small passenger waiting room will complete the terminal at Nantasket.

BOSTON - LONG WHARF

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
5. Pier	1	44,000SF	12.62	15	627,000			627,000
9. Bldg. Const.	1	10,000SF	40	25	500,000			500,000
TOTAL					1,127,000			1,127,000

NOTE: Figures may not total due to rounding.

NANTASKET - HULL

ITEM	NO.	UNIT	UNIT COST $	FACTOR	TOTAL COST PHASE I	PHASE II	PHASE III	TOTAL
5. Pier				15	143,750			143,750
9. Const.				25	100,000			100,000
TOTAL					243,750			243,750

NOTE: Figures may not total due to rounding.

Summary Map

Boston Harbor Islands Comprehensive Plan

Small Boat Moorage

0 2000 4000
Scale in feet

Total Acreage: 1198 ±

N

Massachusetts Department of Natural Resources

Metropolitan Area Planning Council

October, 1972

Boston - Long Wharf and Nantasket - Hull Support Documentation,
1973 March